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Fluid and Electrolytes in Diabetic Acidosis and Coma

The A. D. Becker Memorial Lecture

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The title of this paper was selected to honor the memory of Dr. Arthur D. Becker because in no other place in the field of medicine is there such a need for the clinical knowledge and judgment he so admirably demonstrated.

One needs only to scan the literature concerning fluid and electrolytes in diabetic acidosis and coma to realize the marked diversity of opinions that exists among the various workers in this field. To add further to this confusion are the numerous complex laboratory procedures that are employed in diabetic acidosis and coma, such as determination of the hourly blood sugar and acetone levels, carbon dioxide capacity, hydrogen ion concentration, serum sodium and potassium levels, and urinary sugar and acetone levels. Certainly, when the average physician or even the young internist who works in a hospital without a great deal of specialized equipment sees this battery of tests, he becomes fearful of handling such cases.

The average hospital does not possess a flame photometer for the rapid determination of serum sodium and potassium, and while normally there may be sufficient trained technical assistants to determine carbon dioxide capacity, chloride levels, and hydrogen ion concentration, these cases seem to have an unhappy predilection for occurring over holidays and week ends when the laboratory is operated by a skeleton crew or at night when it is unattended.

It is not the purpose here to discount these important tests. Without the knowledge obtained from them, treatment of acidosis and coma would still be in the stage of twilight or darkness. All patients with these conditions should be treated in the nearest hospital, not one at a center many miles away and, therefore, simple tests may have to be utilized, with diligent employment of clinical knowledge and the placing of the greatest reliance on constant vigilance until the patient is out of danger.

Statistical reports from various centers show marked variations in mortality rates in diabetic acidosis and coma.[1] In some cases, this is due to lack of vigilance. Often, however, it may be due to the condition of the patient on arrival plus the etiologic factor precipitating the attack. Management of a case due to insulin deficiency is quite different from management of a case in which an unusual stress factor, such as coronary occlusion or overwhelming infection, initiated the attack.

No one should ever die of diabetic acidosis, primarily because acidosis should never occur. Every case thus represents a failure on the part of the physician to educate the patient properly to this hazard and to the safeguards and warning signs which must be observed.[2]

Diabetic acidosis is a state of metabolic upheaval with hyperglycemia and glycosuria associated with ketonemia and ketonuria, and the patient, while lethargic, is conscious. Diabetic coma is more severe acidosis in which the patient has lost consciousness. He may or may not respond to external stimuli.

The pathologic physiology can be described as a disturbance of acid-base equilibrium due to ketonemia in association with dehydration. It is produced by failure to take insulin or by an associated stress factor such as burns, including sunburn; infections of any sort; gastrointestinal upsets; or emotional factors. It can also be initiated by combinations of factors, but it is not produced by overindulgence in foods.

The body source of energy is derived from processes making up the Krebs cycle. Fuel can be supplied by protein or fat, but carbohydrate is necessary for maintenance. Carbohydrate can only be utilized by an adequate supply of insulin.

When an inadequate supply of carbohydrate is present, or in diabetes when carbohydrate cannot be utilized to produce the 4-carbon groups necessary to form oxaloacetic acid, the body attempts to use protein for glyconeogenesis. This, however, has as its end-result, glucose, a now useless product. The only source of energy can then be fat which is broken down in intermediary metabolism to 2-carbon groups, still an inadequate source for maintaining energy although they are a source of fuel. To compensate for this, the liver re-forms these 2-carbon groups to 4-carbon groups by the manufacture of acetoacetic acid, acetone, and beta-hydroxybutyric acid, the so-called ketones. These are produced in excess since there is no autoregulatory mechanism for their control other than the utilization of carbohydrate itself, and this is not possible.

The intake of carbohydrate does not accelerate ketone formation, although it will increase hyperglycemia. As a matter of fact, carbohydrate intake stimulates the combustion of carbohydrate, but with an inadequate supply of insulin, this is blocked. On the other hand, in starvation or a diet greatly deficient in carbohydrate, ketonemia will also be present. Peters[3] has demonstrated in children, and even in unstable adults, that hypoglycemia may precipitate an attack of acidosis because the body must utilize the fat stores.

So much attention has been paid to the acid-base equilibrium that it is considered unorthodox not to evaluate the carbon dioxide capacity of the blood in diabetic acidosis or coma. Yet it is agreed that the carbon dioxide capacity cannot in any sense be utilized as a guide to the intensity of the state of ketosis.

Seldin and Tarail[4] have demonstrated that ketones replace the bicarbonate by combining with sodium, but once carbohydrate metabolism is restored, ketones will be burned or excreted, and their production will be greatly inhibited. For this reason, the carbon dioxide capacity cannot be a guide to therapy, and the use of alkali will only confuse the picture. Once carbohydrate metabolism is restored, a state of metabolic alkalosis will be present.

The most devastating factor appears to be dehydration. When insulin deficiency becomes apparent, the blood glucose level rises. This is due to inability to utilize glucose in the steps of the Krebs cycle, plus the inability to store it by glycogenesis, and, what is often not considered, its storage as fat, for certainly obesity is not due to the eating of fats. The result is that the extracellular fluid becomes hypertonic. To overcome this hypertonicity, water is withdrawn from

the cells, and the extracellular fluid compartment is increased by dilution. At this time, the serum sodium is only relatively reduced because this compartment is expanded by this dilution and, if no water is imbibed, the electrolyte stores will not be depleted. However, because of this hypertonicity, the patient's thirst is increased, and large quantities of water are consumed.

The kidneys react to this burden by attempting to increase the elimination of the hypertonic factors, and thereby glucose and sodium chloride are excreted. In addition, because of the ketonemia which the kidneys also attempt to correct, sodium is excreted with the ketone acids, although the kidneys will step up the production of ammonia to conserve this cation.

Even though sodium is depleted and ammonia is being formed, the hypertonic state of the plasma will deter the selective resorption of sodium. If vomiting or diarrhea, or both, supervenes, in which large quantities of fluids are lost, all of which are heavy with electrolytes, the patient's condition becomes rapidly fulminating, and the eyeballs are soft and sunken. The respirations are increased in both rate and depth. The mouth is dry, and the skin is dry and sticky. The blood pressure is variable, but if it is dropping, it is an unfavorable sign denoting shock, and treatment cannot be delayed. It thus becomes apparent that correction must be directed toward the hyperglycemia, dehydration, ketosis, and acid-base imbalance.

There is absolute unanimity that insulin is necessary for the comatose patient, but there is a great divergence of opinion about the amount and frequency of administration. Tolstoi[5] administers small doses of 25 units of regular insulin every half-hour, relying on glycosuria for control. Various physicians prescribe different doses, the greatest schedule being 1,000 units per hour given by Boulin and his associates[6] to a boy. The criteria for dosage vary according to the urinary sugar concentration, blood sugar concentration, blood acetone concentration, and carbon dioxide capacity. Each authority can substantiate his method of deciding on the dosage, and all seem to report rather uniform results regardless of the insulin schedule.

It is obvious that in some cases there is an insulin block present that appears to be maintained regardless of the insulin dosage. The reasons for this block are still not clear but, in the light of present knowledge, it seems that many factors, rather than one, are responsible for it. Stress and its effect on the adrenal cortex must certainly be considered, along with the possible blocking effects of the inability of insulin to function in the acid state produced by ketosis. Peters[3] feels that time is the principal factor in that the change-over from existence on a metabolism almost entirely on fat, without carbohydrate, to a reintroduction of carbohydrate metabolism cannot occur without adaptation, and this of course requires time. The more intense this existence of fat, the more prolonged the time to restore carbohydrate metabolism. In simpler terms, an individual with a normal balance of carbohydrate, protein, and fat available for energy will respond dramatically to a single dose of insulin. If, however, he is unable to utilize carbohydrate but can burn protein and fat, his response to insulin will be slower; if his entire source of energy is from fat, the return to normalcy will be slow indeed.

Insulin by itself cannot correct the state of metabolic abnormality if the patient is grossly dehydrated, especially after vomiting and/or diarrhea. However, I have seen many patients with high blood sugar and acetone levels who have responded to a proper diet with oral fluid intake and insulin alone, but the hyperglycemia and glycosuria were not corrected until all signs of dehydration were gone. In the more severely dehydrated cases, the break-through of the so-called insulin resistance has not been observed to occur until there is restoration of hydration and reduction of ketosis. In the light of present information, it cannot be stated that massive doses of insulin have any superiority over smaller doses, but there is no hazard from these large doses if the patient is closely observed. It does seem apparent that frequent doses are more important than high single doses.

Restoration of the fluids and electrolytes closely parallels insulin in importance, for while insulin deficiency is responsible for the ketosis which produces the acidosis, it is the dehydration that plays the major role in the seriousness of the condition of the patient. This has been demonstrated by Fisher[7] who investigated the total ketone content of the blood and compared it with the depth of consciousness and found that there was no relationship between the two even though excessive ketone production is the precipitating factor.

The time-honored and most practical fluid to administer is isotonic saline, although this is decidedly not a physiologic approach. Isotonic saline contains 150 mg. of sodium and 150 mg. of chloride, whereas normal plasma contains 142 mg. of sodium and 106 mg. of chloride. In acidosis there is hypertonic dehydration with reduction in both sodium and chloride, acidosis being caused by the replacement of bicarbonate with ketones. Adding chloride in excess will further tend to increase the acidosis. Once kidney function can be restored, however, the production of ammonia will be resumed, and this chloride will be excreted, although the renal load must of necessity be great to eliminate the ketone bodies.

What the body really needs is water. The extracellular fluid is hypertonic and has been drawing heavily on the cells for dilution. When an isotonic solution is added, it can and will expand the extracellular fluid compartment, but the fluid is still hypertonic and can further dehydrate the cell. After insulin becomes available, the excessive glucose, which is responsible for part of the hypertonicity, is metabolized, and it reduces the hypertonicity as it is utilized. For this reason, hypotonic solutions of sodium chloride have been used, not without danger, however, as they tend to cause hemolysis.

Butler[8] has devised a solution that contains 550 ml. of distilled water, 410 ml. of pyrogen-free isotonic saline, and 40 ml. of molar sodium lactate. This solution is, of course, hypotonic and must be given slowly to prevent hemolysis. The disadvantage of slow administration is offset by the provision of the much needed water for restoring kidney function and replacement in the cell without the excess of chloride. If the patient is in shock it cannot be used, for in shock, rapid restoration of the plasma volume is of paramount importance, and isotonic solutions at a rapid rate of infusion must be employed. Peters[3] utilizes glucose in a 5 per cent or 10 per cent solution, rather than hypotonic solutions, to replace the water deficit since there is no hazard to its rapid instillation. He cites as a further advantage that one need not fear the later danger of hypoglycemia when it is utilized.

Tolstoi[5] utilizes glucose at the onset of treatment, following the investigations of Mirsky[9] that glucose,

even in excess, will reduce ketone formation. He reasons that the aim in treatment is not the correction of hyperglycemia but reduction of ketosis. There can be little doubt that the use of glucose is the most controversial of all the factors in management.

Root[10] cites, as one of the reasons glucose should not be used, that it obscures the blood sugar level and thus a guide to insulin dosage is lost, a factor of major importance if the glycemic state is utilized as the basis of treatment. Since ketonemia and dehydration are the abnormal states that must be corrected, the criteria of Duncan[11] in following the level of the ketonemia would seem to be a more valid approach. Root also lists other reasons why glucose should not be used. They are: damage to the liver and pancreas, production of anuria, neutralization of insulin, and production of hypopotassemia.

This last factor needs elaboration: In diabetic acidosis, before treatment is instituted, the serum potassium is normal or slightly elevated, even though the total potassium content of the body is decreased. When the extracellular compartment becomes hypertonic, it withdraws water from the cell. In so doing, potassium is also removed, for water cannot move in the body without electrolyte, and the potassium concentration in the extracellular space is elevated well above the usual 5 mg. This is further exaggerated by the inability of the kidneys to remove this excess since they already have an enormous load in diluting the concentrations of waste products and sodium and glucose. If much diarrhea or vomiting has occurred, potassium is also lost through this route.

Potassium is necessary for the function of glucose metabolism in the processes of the Krebs cycle. As insulin is replaced and the Krebs cycle again begins to use carbohydrate, potassium is utilized, and the serum potassium begins to drop rapidly, for the volume of the extracellular compartment is small as compared to that in the cell. Also, as water is replaced and the shocklike state is reduced so that kidney function is improved, the kidneys will eliminate the potassium excess.

If potassium is given early when hyperpotassemia is already present, dangerous, if not fatal, results can occur because of cardiac arrest or muscular paralysis or both. If potassium is not administered once hypopotassemia has developed, the patient will become progressively weaker with loss of reflexes and muscular weakness with respiratory paralysis. The patient no longer utilizes the abdominal muscles for breathing, and air hunger is apparent, with respirations that are rapid and shallow. The lung fields do not demonstrate rales, and the tongue protrudes in a fish-mouth type of breathing which terminates in respiratory failure.

There can be little doubt that the potassium level is important and must be closely followed if the patient is to recover. If a flame photometer is available, this must be used as a guide; if not, the less accurate but still very valuable electrocardiogram will have to be employed. During the hyperkalemic state, the Q-T interval will be short, voltage will be reduced, and the T-wave will be narrow and peaked. Later, the P-wave will reduce and even become absent, and bizarre arrythmias will develop. In hypokalemia, the Q-T interval is prolonged, principally by broadening of the T-wave to give it a tunnel effect. This later becomes flat, and premature beats and prominent U-waves are noted. The P-R interval is prolonged.

If neither a flame photometer nor an electrocardiograph is available, it is still possible to control the patient by giving the potassium parenterally, assuming the kidneys are functioning, by putting 2 grams of potassium chloride in the first bottle of glucose when the blood sugar has approached normal levels. Potassium should never be given parenterally if the kidneys are not functioning. If the patient can take fluids orally, this is the safest route, and orange juice or potassium gluconate, as Kaon, in doses of ½ to 1 ounce every 2 hours for a total of 3 ounces should be given.

The therapy employed at the Harrisburg Osteopathic Hospital varies according to the individual requirements of the patient, but certain procedures are followed.

In the home, once the diagnosis is established, 50 units of regular insulin are given and 1 cup of salty broth if the patient can retain it. Many times, nausea, if not severe, will cease by this method. The patient is sent to the hospital by ambulance and, if it is a long trip, 50 units of insulin are administered en route.

The routine orders on admission, once the diagnosis is established, are:

1. Administer 50 units of regular insulin immediately.
2. Begin administration of 1,000 cc. of isotonic sodium chloride by venoclysis.
3. Determine blood sugar and acetone levels; perform a blood count and grouping.
4. Determine urinary sugar and acetone levels.
5. Notify department head and alert intern and laboratory.
6. If acetone is 3 plus or more, add 50 units of regular insulin to the infusion.
7. If the patient is conscious and not vomiting, give him 1 cup of salty broth and 1 glass of orange juice.
8. Prepare a coma chart with periodic record of temperature, pulse, respirations, blood pressure, fluid intake and output, laboratory findings, medication administered, and mental state of patient.
9. The intern is to remain in full attendance; the patient should have a special duty nurse if possible.
10. Obtain an electrocardiogram.
11. Insert an indwelling catheter with tidal drainage.

Follow-up orders:

1. Determine urinary sugar and acetone levels every half hour; administer 50 units of insulin after each 4 plus glucose test if acetone is present. If acetone is not present, reduce amount of glucose to 25 units if 4 plus, 15 units if 3 plus, 10 units if 2 plus, and orange juice or glucose if clear.
2. Determine blood sugar and acetone levels, and obtain an electrocardiogram every 2 hours.
3. Continue isotonic sodium chloride by vein. The third liter, however, should be 5 per cent glucose in water with consideration of the previously mentioned rules regarding potassium.

When the blood sugar level begins to decline and after the acetone is eliminated, insulin must be administered with caution. It is important to remember that even though the blood sugar level is not high, the patient can still be in a state of severe acidosis because of deprivation of exogenous carbohydrate before admission; this may be the result of anorexia, but usually it results from nausea and vomiting.

If the blood pressure continues to fall after administration of the saline infusion has been started, an immediate blood transfusion is indicated. This transfusion must not be utilized as a substitute for electrolyte administration, for the blood may prove to be hyper-

tonic in relation to the patient's plasma and would thus further dehydrate the cells. It must, therefore, be given in another vein, even though a cut down is required for it.

Vitamin B complex is usually put into the first bottle of saline (see order no. 2) on the premise that it will hasten carbohydrate metabolism and thus eliminate the production of ketones.

The period when the urine becomes sugar free is a very crucial one, for the patient may go very rapidly into insulin shock, and the blood potassium will become quite low. Five per cent glucose in water with 2 grams of potassium is administered at this time if it has not been previously administered. The patient at this stage is conscious, and the vomiting should have ceased. Small feedings of broth and orange juice should be given along with small doses of regular insulin at each feeding. The next day, half the dose of long-acting insulin that was used prior to the illness is given in the morning, and regular insulin is administered during the remainder of the day, the amount depending on the results of urine fractionation.

Gastric lavage is never performed routinely. It is ordered only when nausea and vomiting persist or the patient becomes markedly flatulent. It should be kept always in mind that abdominal distention may be the result of potassium imbalance.

In summary, it has been shown that diabetic acidosis is a metabolic upheaval due to the production of excess ketones which, in turn, is the direct result of the inability of the body to metabolize carbohydrate.

There is universal agreement that restoration therapy must include the use of insulin and fluid and electrolyte replacement. There is, however, no unanimity as to how this should be accomplished.

Finally, it is not necessary to have complex laboratory facilities to handle cases of diabetic acidosis or coma, although they may be of distinct aid. Clinical knowledge and judgment will decide the outcome, and no machine has yet been developed that can replace the physician who utilizes these tools.

122 Muench St.

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The Diagnosis and Classification of Leukemia

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Diagnosis and accurate classification of leukemia are more than academic exercises for the pathologist or hematologist. In the light of recent chemotherapeutic discoveries they form an absolute must if the patient is to receive proper care guided by some semblance of reason. The material to be presented here is not original, but rather it consists of the procedures and theories which we have incorporated and in part modified into our routine in the hematology sections of the Department of Pathology of the Detroit Osteopathic Hospital. These modifications are based on our particular needs and experiences over the past few years.

DIAGNOSIS

In the diagnosis of leukemia the most important factor has been awareness of the frequency of the disease and the subtle clinical guises it presents. A staff oriented to the increasing incidence of leukemia and its protean symptomatology will consider it more frequently in the differential diagnosis of ill-defined clinical pictures.

The classical, full-blown picture of fever, weight loss, lymphadenopathy, and hepatomegaly and/or splenomegaly associated with an increased leukocyte count requires a minimum of diagnostic acumen. In this paper I am more concerned with those cases ushered in quietly by a degree of anemia refractory to routine hematinic therapy or of no readily defined origin. Awareness of the high incidence of leukemia is particularly necessary in the care of children, who show such commonly encountered signs and symptoms as pallor, anemia, and fatigue often associated with recurrent sore throats and minimal cervical node enlargement. It is a proved fact that children up to the age of 5 years show a higher percentage-wise incidence of leukemia than any other age group.

Space does not permit listing the multitude of signs and symptoms encountered in leukemia. I prefer to consider the laboratory steps which we have found to be of value in the diagnosis of leukemia once the seed of suspicion has been sowed.

Complete Blood Count.—The routine complete blood count is the foundation of hematomorphologic study. The routine use of hematocrit determinations is also to be commended since it complements the complete blood count and allows for determination of cell indices at the time of initial blood examination. As a general rule, we insist upon classification, morphologically by means of cell indexes, of all anemias prior to the more specialized hematologic procedures, particularly bone marrow studies.

Peripheral Blood Smears.—Careful examination of the peripheral blood smear is a most important phase of routine blood examination. Competent personnel can mean the difference between diagnosis and missing a case in its early stages. This is particularly true in acute leukemias in which the cell type is usually a stem or blast form and is not infrequently identified as a lymphocyte by the less than adequately trained technician. Unless there is no question of the technician's

ability to identify the cells, the smears should be submitted to a pathologist or hematologist for evaluation. This cannot be too strongly emphasized.

Concentration Smears.—In leukopenia, a concentration smear of the white cells may be required to allow for more ready identification of the cells. This is performed by filling a Wintrobe hematocrit tube and allowing the blood to settle for about 5 to 10 minutes. The tube is then centrifuged for 3 to 5 minutes at no more than 1,500 revolutions per minute. Supernatant plasma is removed by careful pipetting, and the packed layer of white cells, the so-called buffy cell layer, is recovered, expressed onto a clean slide where it is carefully mixed, and once again aspirated into the pipet. Smears are then made by utilizing one drop of this concentrated blood and are stained in the routine manner. In performing this procedure it is imperative not to use oxalated blood because of the morphologic changes often produced by the use of oxalates as anticoagulants. Our technic is to aspirate no more than 0.1 cc. of heparin solution under sterile conditions into the syringe to be used. The plunger of the syringe is drawn back and forth so as to wet thoroughly the inner surface of the syringe. The excess heparin is then expressed prior to venipuncture. Some institutions place a few crystals of heparin rather than the solution into the syringe, but this has drawbacks in that it is quite expensive and less easily performed than the technic which we use.

Bone Marrow Studies.—

If there are strong indications that leukemia is present after the above procedures have been performed, the next step is bone marrow study. Our practice is to utilize the sternum whenever possible. In children up to the age of 5 or 6 years puncture is made about 1 fingerbreadth below the tibial tuberosity. Many hematologists prefer to aspirate the marrow from the vertebral spines in infants and children and have had good results. This technic is utilized at the Children's Hospital of Michigan in Detroit. Still others utilize the sternum. From about the age of 8 or 9 years to perhaps 15 or 16 the iliac crest may be used. In all other patients, sternal aspiration is the technic used.

The Turkel needle[1] has proved quite satisfactory and safe in our hands. Briefly our technic is this: We use a dry 2-cc. syringe with minimal suction for the initial or first drop smears and never draw more than 0.2 cc. of marrow. This prevents the inrush of sinusoidal blood into the marrow spaces which may dilute the marrow with peripheral blood and give a false differential count. A second syringe rinsed with sterile heparin, as described for pickup of buffy cell layers on peripheral blood, is used for a second aspiration while the technician is making the first drop smears. We aspirate with some degree of force approximately 1.5 to 2 cc. of marrow with the second syringe so as to have enough material to fill a hematocrit tube. Recently we have been performing routine marrow hematocrit studies as suggested by Limarzi.[2] The buffy layer obtained from the hematocrit is used for concentration smears. Particulate matter is also aspirated from the marrow cavity in this procedure. These particles are recovered from a Petri dish into which the marrow has been poured and are compressed between clean glass slides to produce what we call marrow particle imprints. The imprints, we have found, are an excellent means of obtaining what would amount to biopsy pictures of the medullary cavity. This particle and marrow concentration technic has been particularly useful in searching for metastatic tumor involving the bone marrow.

The occurrence of a dry marrow tap is of significance in the presence of findings suggestive of lymphoblastoma, particularly lymphosarcoma. We have encountered these dry taps in a number of cases that subsequently were proved to be lymphosarcoma. Our first few experiences with this phenomenon, however, caused us much grief and precipitated careful evaluation of our technic for possible error. Others[3] have noted this dry tap phenomenon and have explained it as a result of attempting needle biopsy or, more often, aspiration from an area of solid tumor, implying that the lymphosarcoma has proliferated in the medullary cavity with crowding of the more normal marrow. In any event, in the case of a dry tap, what little blood-tinged fluid is aspirated should be expressed onto slides, and smears should be made for study.

Lymph Node Biopsy.—Lymph node biopsy is of course of great value, especially when done in association with peripheral blood studies. Diagnosis of malignant lymphoma involving lymph nodes is frequently not a simple histologic procedure. Knowledge of the peripheral blood count and cytologic picture will often mean the difference between delayed and immediate diagnosis.

Coombs' Test.—Other less frequently employed, but nonetheless useful, laboratory measures include the Coombs' test for demonstration of antibody production and the thrombocyte count. Recent work[4,5] has shown anemia in malignant lymphoma to be, on many occasions, due to the development of an autoagglutinin, probably by elaboration of an abnormal globulin fraction on the part of the malignant lymphocyte, thus causing an autoimmune hemolytic anemia. Thrombocytopenia is a frequent finding in acute lymphocytic leukemia and also in chronic myelocytic leukemia which is near the terminal stage.

Splenic Aspiration.—An infrequently used diagnostic means is needle aspiration of the spleen, using a regular hypodermic syringe, either 20 or 50 cc., and an 18-gauge long needle. In instances of unexplained splenomegaly in which lymphosarcoma is a serious consideration, this procedure may be of considerable value. Suction is applied by pulling back on the plunger of the syringe, and in the same motion the entire syringe is withdrawn from the site of the injection. The aspirated bloody material is immediately expressed onto a number of slides, smeared in the same manner as that used in making routine peripheral blood smears, and then stained with the usual blood stains. We have utilized this technic on only one occasion where multiple marrow aspiration continued to be of the dry variety and where all evidence pointed to lymphoblastoma. The enlarged spleen was entered in this fashion; the recovered cells proved to be malignant and confirmed the clinical impression of lymphosarcoma. This technic has recently been reported used in a series of cases at the King's County Hospital in Brooklyn.[6]

CLASSIFICATION

Classification of these disease processes is the next point to be considered. Numerous classifications have been presented, probably equaling in number the men who have devoted their time to this problem. We have adopted, with some modification, the classification used in the Department of Hematology of the Receiving Hospital of Detroit which is associated with the Wayne University Medical School.[7] In the classification we consider the cell type primarily and qualify this by estimation of the acuteness of the case based on the

percentage of blast cells found in the peripheral blood. A third classification factor is the degree of overtness of the leukemic state, that is, whether the leukemia is of the leukocytosis or aleukemic variety.

Reticuloendotheliosis.—

The term "reticuloendotheliosis" refers to the most primitive cell type of leukemia encountered. It is also called blast or stem cell leukemia. In this type, proliferation takes place at the most basic level and often we are unable to define clearly the cell type evolving. In instances in which some degree of maturation is occurring, although the predominant cell is of blast form, two subvarieties of reticuloendotheliosis can be listed. One is the myeloid variety, the other the monocytic (or sometimes lymphocytic) variety; often the two are called the Naegeli and the Schilling varieties, respectively, according to the classification of Downey.[8] Those cases in which differentiation is not at all noted are listed as stem cell or reticulum cell myelosis, which is the terminology frequently employed by German authors.[9] It is interesting to note the progression of cell maturation in these cases. At one time the cells may simulate myeloblasts and shortly thereafter might possibly be considered monocytoid by the same investigator. These findings are a very strong argument for the monophyletic theory of cell development.

The cell type found in reticuloendotheliosis is not infrequently that noted in aleukemic leukemia. It is in these cases that the onset is most often acute and the termination rapid, although there have been instances of use of the more recent chemotherapeutic agents in which the cell type has been converted to a mature form with subsequent increase in longevity. Extreme caution must be exercised since these cells might very readily be labeled lymphocytes or perhaps abnormal monocytes of the infectious monocytosis variety by well-intentioned but less than adequately trained technicians.

Granulocytic Leukemia.—The cell type is readily identified most of the time in this variety. However, in instances of acute granulocytic or perhaps, more correctly, myeloblastic leukemia, a differentiation of cell type from that of a lymphocytic or monocytic type is difficult. This difficulty is particularly noted when the cells are at the myeloblastic or perhaps premyelocytic level. In these instances special stains such as Graham's peroxidase stain may be of value. Again the company the cells keep must be observed; it often will give strong indications of the type of the cell noted.

Monocytic Leukemia.—When it is well defined, there is little difficulty in identifying monocytic leukemia. As mentioned previously, trouble does arise when blast forms are extremely bizarre and suggest the possibility of myeloblastic leukemia. Less frequently the paramyeloblast may be present and confused with the monoblast. This cell contains a multilobular nucleus often coiled upon itself, thus giving the impression of being monocytic in origin. Monocytic leukemias are often close to reticuloendotheliosis in nature in that the clinical history reveals an acute onset, or subacute, leading to rapid death in spite of therapy. This cell type has not been too frequent in our experience at the Detroit Osteopathic Hospital.

Lymphocytic Leukemia.—

This cell type is extremely frequent, particularly if leukemia is considered part of the general disease process of malignant lymphoma. Furthermore, this cell type shows numerous interesting features not common to the other cell forms. Lymphocytic leukemia is more frequent in children and shows a stronger familial tendency than do the other leukemias. The cell types themselves often show variance which can be rather characteristic. We have frequently observed lymphocytes, or perhaps they should be more properly termed "lymphoblasts," with nuclei resembling a boxing glove. In these instances there is indentation of the nucleus of rather pronounced degree, but it is eccentric and gives the impression of a thumb and forefinger in a gloved hand.

Reniform nuclei are also noted among the bizarre lymphocytes. At other times the cells are very small with but a minimum of cytoplasm surrounding the nucleus. These cells are suspicious even though nucleoli cannot be identified. In other instances, the lymphocytes arrange themselves in a spindle form with all the cells in a particular field pointing in the same direction. This in particular has interested us since little is written about this phenomenon. Unfortunately, the trait has also been noted in nonleukemic states and is therefore nonspecific. It may occur in relation to osmotic changes in the cell membranes based on the hydrogen ion concentration of the stain being used. We hope shortly to check routinely the hydrogen ion concentration of our blood stains and perhaps clearly demonstrate this change to be based on the hydrogen ion concentration.

Acuteness of the Case.—

When a case has been classified, I next attempt to determine the clinical status of the patient. This is most important from the standpoint of therapy and prognosis. What to tell the family about the estimated survival time is most difficult, but in my opinion quite necessary. Too often this facet of the doctor-patient relationship is sloughed off, and I would therefore urge all physicians who come in contact with leukemia to read two recent articles[10,11] concerning the reactions of the parents of children in whom leukemia was diagnosed.

Classification of the degree of the disease depends on the percentage of blast forms found in the peripheral blood on differential examination. These percentages have been correlated with the duration of survival of the cases.

Acute leukemias are those in which at least 75 per cent of the cells on differential examination are blast or stem forms. This form of leukemia runs a rapid course, frequently terminating in a matter of weeks. Subacute leukemias are those showing 20 to 40 per cent of blast forms on differential examination. These leukemias terminate in 6 months to a year and are most frequently the monocytic variety. The chronic form shows from 0 to 10 per cent blast forms, and death may not occur for years.[7]

The above figures are not absolute but do allow a certain amount of leeway between classifications. An individual, particularly an adult, with blood containing approximately 45 per cent to 55 per cent of blast forms is more properly considered to have subacute than acute leukemia, although at any time the condition may become acute.

Degree of Overtness.—The third and probably least important factor in the classification of leukemias is the degree of overtness of the case. This refers to the total count on peripheral blood examination. Wintrobe[12] makes the point that the use of the terms "aleukemic" and "subleukemic" to denote separate situations should be discontinued and in fact has been discontinued by men in the field. "Subleukemia" is perhaps a more correct term and implies absence of bizarre or

immature leukocytes in the peripheral blood. Marrow aspiration in these cases demonstrates the presence of malignant cells. Furthermore, subleukemic leukemia is one in which leukocytosis is not present; a normal leukocyte count or leukopenia is found in these cases.

CONCLUSIONS

I have briefly discussed a few of the less often utilized diagnostic procedures and the more common technics available for the study of leukemia. The synthesis of newer therapeutic agents and more refined irradiation technics make it more imperative than ever that leukemias be carefully evaluated and diagnosed so that proper therapy can be utilized. There is never indication for therapy in presumed cases of leukemia. The diagnosis of leukemia is not one to be rushed into lightly because of the invariably fatal outcome of the disease and the death sentence which hangs over the patient.

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Practical Aspects of Cardiac Catheterization

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Cardiac catheterization has practical application in both congenital and acquired heart disease. In congenital cases the chief purpose is to establish a clinical diagnosis and thereby determine if the lesion can be corrected surgically; in acquired heart disease the chief use is in evaluating patients with mitral stenosis for possible commissurotomy. It has also been useful in revealing cases of tricuspid valvular stenosis or insufficiency. The diagnosis of pulmonary heart disease may be confirmed. The equipment used for recording pressures in right heart catheterization is readily used for a brachial arteriogram in studies of aortic valvular disease.

PREPARATION OF THE PATIENT

Studies have been made in adults and children in the fasting and resting states. Infants have been given their bottles up to 4 to 5 hours before the time of catheterization. Adults are premedicated with Delvinal sodium, 100 mg. 1 hour prior to the procedure. Older children are premedicated in the same manner. Younger children and infants are premedicated with morphine and sodium phenobarbital for sedation. This consists of sodium phenobarbital, 30 mg. per 10 pounds of body weight 1 hour before the procedure, and morphine sulfate, 1 mg. per 10 pounds of body weight a half-hour before the procedure is started. General anesthesia has not been necessary. Hyperexcitability due to morphine in one female child was controlled by Nembutal injected through the cardiac catheter in a dosage of 1.0 mg. per pound of body weight.

All the patients received penicillin prophylactically the night before catheterization unless there was sensitivity, in which case another antibiotic was used.

Continuous electrocardiographic observations have been routine, except in an occasional infant in whom the presence of the electrodes and lead wires appeared to be more disturbing than the catheterization procedure itself. Equipment has been readily available in these cases as well. Frequent premature systoles and transient auricular flutter, auricular fibrillation, and auricular or ventricular tachycardia have been observed which, however, ceased upon withdrawing the catheter to the superior vena cava. In no case was it necessary to stop the procedure because of these variations in rhythm.

No drugs, such as Pronestyl or quinidine, were given prophylactically. Originally procaine, 0.1 per cent, was used as continuous drip through the cardiac catheter but has since been discarded in favor of normal saline.

EQUIPMENT

Catheters used in adults have been the Cournand type, 125 cm. long, usually no. 7, 8, or 9. In infants and children the no. 7, 100-cm. catheter can usually be used. If a smaller catheter is necessary, the no. 6F Lehman thin-walled catheter is preferred.

Sterilization has been by soaking in Detergicide for 30 minutes followed by rinsing with sterile water. Immediately after use the catheter is rinsed with heparin solution, filled with Haemo-sol solution and soaked for 1 hour, and then rinsed for 1 hour with tap water through a pressure connection.

Instrument setup has consisted of a venous cutdown tray with several three-way stopcocks. A second tray is used for 15 to 20 10-cc. syringes with Luer-Lok adapters to be used in the sampling of blood. These dry syringes are prepared by rinsing with full strength heparin solution, leaving a small amount of heparin clinging to the walls of the syringe and within the tip.

Oxygen consumption when measured has been with the standard metabolism apparatus.

Apparatus for recording blood pressure originally consisted of a Tycos aneroid manometer connected by a piece of rubber tubing to the catheter. A saline manom-

eter was also used on occasion. Quite satisfactory pressure tracings have been obtained with an electrical manometer (Physiological Pressure Transducer, P23A, Statham Laboratories) connected through the electrical control box to an ordinary Cambridge string galvanometer electrocardiograph. Pressure tracings at present are done with the electrical manometer attached to a two-channel direct writing electrocardiograph (Sanborn, Model 60) with which the patient's electrocardiogram is recorded simultaneously with the pressure curve.

TECHNIC

Technic has been according to the method of Cournand:[1] In adults and older children an arm vein is used, preferably the left arm. In infants and small children the saphenous vein is used at the femoral area.

In studies for mitral stenosis the tip of the catheter is advanced in the pulmonary artery to one of the smaller vessels, and under pressure the tip is further advanced until it occludes the vessel; the pulmonary venous capillary pressure is obtained before the other pressure determinations are made.

Blood gas analysis has been by the Van Slyke-Neill method.

The procedure has been carried out by a team consisting of the operator who does the cut-down and manipulates the catheter, the radiologist who handles the fluoroscopic equipment and takes the spot film x-rays, and the laboratory technician who is well trained in the handling of blood samples and in blood gas analysis. An additional member of the team studies the continuous electrocardiographic tracings and makes the recordings.

In cases of suspected congenital defect, following the catheterization procedure the tip of the catheter is left in the atrium or ventricle according to the type of defect suspected, and 6 cc. of fluorescein are injected rapidly through the catheter while the tongue and lips are observed with ultraviolet light and Wood's filter for determination of the circulation time.

COMPLICATIONS

No serious complications have been observed in our series. Minor thrombophlebitis in the arm has occurred. Intracardiac thrombosis and persistent rhythm disturbances have been reported. Blood loss during the procedure may be significant in infants, and for this reason compatible blood has been made available for transfusion before beginning the procedure in these cases. However, transfusion has not been necessary.

CONGENITAL HEART DISEASE

Cardiac catheterization may yield three types of information in congenital cardiac disease: (1) Normal or abnormal pressure relationships may be demonstrated in the vena cava, right atrium, right ventricle, or pulmonary artery. (2) The presence, general location, predominant direction, and often the approximate minute volume of intracardiac or extracardiac shunts can be established by analysis of suitable blood samples for oxygen content. (3) Less often, even more conclusive evidence of the presence and location of a shunt may be obtained when the catheter passes directly through the abnormal communication.

Cardiac catheterization may be of tremendous assistance in the evaluation of difficult cases but, as with other special procedures, it should never be employed as a substitute for the usual clinical, roentgenologic, and electrocardiographic studies in individuals suspected of having congenital heart disease.[2]

Pulmonary Stenosis.—In pulmonary stenosis, even when the diagnosis is made by clinical means, it is necessary to resort to cardiac catheterization for exact determination of the degree of stenosis. The diagnosis is made by a pressure gradient of 12 mm. or more of mercury between the pulmonary artery and the right ventricle. On the basis of appearance of the curve as the catheter is withdrawn from the pulmonary artery into the ventricle, it is possible to distinguish between valvular, infundibular, and combined stenosis.[3]

Interatrial Septal Defect.—Cardiac catheterization reveals intracardiac left-to-right shunt with increased oxygen content of right atrial blood. The catheter may pass through the defect into the left atrium and pulmonary vein.[2]

Interventricular Septal Defect.—

In the majority of cases the blood gas analysis is diagnostic. The oxygen content of the right ventricle should be greater than that of the right atrium; a difference of more than 1 volume per cent is usually required for the value to be regarded as significant. The shunt is usually large, and moderate pulmonary hypertension is present. More severe hypertension may be the result of increased resistance in the pulmonary artery. Raised pressure in the pulmonary artery may also be caused by increased pulmonary venous pressure as a result of left ventricular failure.[3]

A high interventricular septal defect is very frequently associated with other abnormalities of cardiac development but may occur as an isolated lesion. It usually lies within the confines of the membranous portion of the septum, perhaps taking up all of it.

Low defects of the ventricular septum are essentially congenital perforations of the intramuscular septum. Such defects are quite rare and are characteristically small in size.[4]

Eisenmenger Complex.—In this condition the tip of the catheter often enters the aorta directly from the right ventricle. The pressure of the right ventricle is high; it may be extremely high. The systolic pressure should be identical with that of the aorta. It is necessary to enter the pulmonary artery in order to exclude associated pulmonary stenosis. Systolic pressure of the right ventricle should be identical with that of the pulmonary artery.[5] A small but definite systolic pressure gradient between the right ventricle and pulmonary artery can occur.[6] Oxygen saturation is higher in the right ventricle than in the right atrium. It is normal in the pulmonary veins.[5]

Primary Pulmonary Hypertension (Primary pulmonary obliterative endarteritis).—This is differentiated from pulmonary stenosis by the absence of a pressure gradient between the pulmonary artery and right ventricle. Both may have a systolic murmur, right-sided congestive heart failure, a grossly enlarged heart with right ventricular hypertrophy and right auricular dilatation, dilated main pulmonary artery and major branches, but clear peripheral lung fields, decreased oxygen consumption, and increased ventricle to face circulation time.[7]

Endocardial Sclerosis.—

Endocardial sclerosis or fibroelastosis causes symptoms of failure of the left ventricle. The clinical course may be short, or it may be prolonged for several weeks or months. Physical findings include evidence of dyspnea, cardiac enlargement, tachycardia, absence of cardiac murmurs or presence of a soft systolic murmur, pulmonary congestion, and, frequently, enlargement of the liver. X-ray examination shows cardiac enlargement with pulmonary congestion; evidence of hyper-

trophy of the left ventricle is usually demonstrated on an electrocardiogram.[8]

Cardiac catheterization shows normal circulatory dynamics unless an associated defect is present or cardiac failure supervenes.[2]

Glycogen Storage Disease.—

Glycogen storage disease of the heart is a rare disease whose primary cardiac importance lies in its differential diagnosis from the other causes of cardiac hypertrophy in infancy. Symptoms may be the same as those of endocardial sclerosis.[9] Fasting hypoglycemia, ketosis, and hypercholesteremia are characteristic.[10]

A typical electrocardiographic pattern has been described characterized by severely depressed S-T segments with sharply inverted T-waves in leads I and II and usually in lead III.[11]

Cardiac catheterization would be expected to reveal normal circulatory dynamics, and this was true in our one case which also showed characteristic electrocardiographic findings.

Trilogy of Fallot (Pulmonary stenosis with normal aortic root and with interatrial communications with right-to-left shunt).—

This condition may be confused with Ebstein's disease, tricuspid atresia, and tetralogy of Fallot. Clinical history is unlikely to be of value since the symptoms of dyspnea and cyanosis present from birth or delayed in onset may be common to all four conditions.

The radiographic appearance of pulmonary stenosis and Ebstein's syndrome may be similar.[12] The electrocardiogram may show left axis deviation, but right axis deviation and right bundle branch block seem more common.[5]

The electrocardiogram in cases of pulmonary stenosis with intact ventricular septum shows large positive deflections in lead V_1 which may extend to lead V_4 and even beyond. The large size of these deflections reflects the thickness of the right ventricular wall and differs from the small deflection in leads V_1 to V_4 found over the thin, tight ventricle of Ebstein's anomaly.[13]

Demonstration of a sharply demarcated differential pressure zone at the pulmonary valve with low or normal pressure in the pulmonary artery is a necessary physiologic proof of pulmonary valvular stenosis. In the presence of interatrial communication the catheter may purposely or fortuitously pass from the right to the left atrium and into the pulmonary vein through the mitral valve orifice into the inflow track of the left ventricle.[14]

It should be pointed out that cardiac catheterization is considered dangerous in Ebstein's anomaly. Several deaths following catheterization have been reported.[15] Angiocardiographic examination is also considered to be associated with risks and the information of extremely limited value.[3]

Congenital Aortic Stenosis.—In congenital aortic or subaortic stenosis, cardiac catheterization is chiefly of value in ruling out other defects such as interventricular septal defect.[1] The brachial artery pressure curves are characteristic. In aortic stenosis the peak consistently ranges from 0.20 to 0.27 second, averaging 0.23 second. In cases with doubled peaked curves, the first peak ranges from 0.08 to 0.13 second, averaging 0.10 second, and the second peak ranges from 0.16 to 0.25 second, averaging 0.21 second. In normal individuals the onset of the peak of systole from the beginning of the rise of the brachial artery pressure curve ranges between 0.06 and 0.09 second.[16]

ACQUIRED HEART DISEASE

Mitral Stenosis.—Most of our studies have been in evaluation of cases of mitral stenosis for possible commissurotomy. Patients have been classified by a correlation of clinical and catheterization data according to the method of Dexter.[17]

Stage 1:

Patients are usually free from symptoms if they refrain from strenuous exercise or prolonged exertion. The left auricle may be enlarged on fluoroscopy, but electrocardiographic and radiographic evidence of right ventricular hypertrophy is absent.

At catheterization no increase in pulmonary vascular resistance is demonstrated. Pulmonary capillary pressure, pulmonary artery pressure, and right ventricular pressure are within normal limits and are not increased upon exercise.

As previously stated, at the time of catheterization the tip of the catheter is wedged within one of the smaller branches of the pulmonary artery. The pressure curve is noted, and an additional tracing made in the pulmonary artery. With the tip of the catheter in the pulmonary artery, the patient exercises, lying supine, by doing a bicycle-riding type of exercise for 5 minutes at a standardized rate and amplitude of movement. Pressures can then be easily redetermined in both the pulmonary artery and capillary positions.

Stage 2:

Stage 2 includes the patient who may become comfortable at rest but in whom severe pulmonary symptoms appear with mild exertion, emotion, or tachycardia. Orthopnea, paroxysmal nocturnal dypsnea, attacks of acute pulmonary edema, and hemoptysis frequently occur. Electrocardiographic and radiographic evidence of right ventricular enlargement may or may not be present.

Catheterization findings are usually normal at rest but become elevated following the 5 minutes of exercise.

Stage 3:

Stage 3 patients may or may not have passed through clinical stages 1 and 2. Considerable dyspnea is present but appears to be masked by fatigue. Activity is much curtailed.

The electrocardiogram practically always shows right ventricular hypertrophy. Radiographically there is enlargement of the left atrium, right ventricle, and pulmonary artery.

At catheterization the resting capillary pulmonary artery and right ventricular pressures are elevated.

Stage 4:

Stage 4 patients have dyspnea, orthopnea, and paroxysmal nocturnal dyspnea as they are on the verge of pulmonary edema at all times. Loss of weight and cachexia are common. The patient is usually bedridden or nearly so. Signs of right ventricular failure are frequently found. Generalized cardiac enlargement 50 per cent or more above normal is usual. The electrocardiogram always shows evidence of right ventricular hypertrophy.

Mitral Insufficiency.—

At catheterization the resting pulmonary capillary pressure, pulmonary artery pressure, and right ventricular pressure are greatly elevated.

Evaluation of the presence or the extent of mitral valvular insufficiency has been attempted on a clinical, electrocardiographic, and radiographic basis as well as on the basis of catheterization findings. Clinically, fatigue plays a more dominant role than exertional dyspnea. A systolic murmur is not believed to be en-

tirely diagnostic because a systolic murmur at the mitral area has been reported in 30 per cent of the patients who had only pure mitral stenosis. Massive (aneurysmal) dilatation of the left atrium is usually considered to be caused by mitral stenosis with associated insufficiency, although it is thought by some to be more characteristic of pure mitral stenosis. Right ventricular hypertrophy may be present associated with severe insufficiency.[18]

Catheterization findings are those of increased pulmonary capillary pressure. The curve characteristically shows a V-wave of increased amplitude; however, although the large V-wave is often indicative of the presence of regurgitation, it is by no means a good measure of its degree.[19]

Tricuspid Valve Disease.—

Catheterization of the patient with rheumatic heart disease occasionally demonstrates changes in the right atrial pressure curve indicating tricuspid valvular disease. In organic tricuspid disease the amplitude of the regurgitant wave in the atrium is the most valid basis for establishing the presence of insufficiency. The right ventricular pressure curves are characterized by notching of the systolic wave. An abrupt early diastolic dip may occur followed by an immediate rise to an elevated plateau which has been described as one of the components of the pattern of right ventricular failure.[20]

Catheterization has demonstrated tricuspid regurgitation where there is no clinical evidence of such insufficiency, although it is not a contraindication to operation. The impression is that patients with tricuspid insufficiency do not improve either hemodynamically or clinically after mitral valvular surgery as well as those without the lesion.[21]

Aortic Valvular Disease.—

Right heart catheterization is not helpful in establishing the diagnosis of aortic stenosis or regurgitation. Pulmonary arterial pressure is normal with pure aortic stenosis. When elevated it is attributed to mitral stenosis or pulmonary vascular changes of left ventricular failure.

Stenosis of the aortic valve considered to be clinically mild may become of great dynamic significance following mitral commissurotomy. A brachial arterial pressure curve is extremely valuable in such cases. If the resting brachial arterial curve is unrevealing, the Valsalva maneuver may be decisive. The criteria for evaluation of stenosis are given under the subhead, congenital aortic stenosis.

Pulmonary arterial pressure is generally within normal limits in aortic regurgitation. The most frequent cause of pulmonary hypertension is left ventricular failure. The brachial arterial pressure curve in patients with aortic regurgitation shows a steep rise in ejection, and the peak consistently occurs early. Several peaks are frequently observed. The descent is rapid to the point where the dicrotic incisura is expected. The most constant abnormality is flattening or disappearance of the dicrotic incisura or wave.[16]

A technic for a paravertebral method of left heart catheterization has been described in which a needle is inserted into the left atrium, and once this pressure is measured, a fine, soft plastic catheter is introduced through the needle through the left atrium and into the left ventricle. Following this the catheter is passed out into the aorta. Pressure measurements are then made when the catheter is withdrawn from the aorta into the left ventricle.[22] I have not used this method of catheterization.

Chronic Pulmonary Heart Disease.—

Right heart catheterization gives positive confirmation of the presence of pulmonary heart disease, particularly in stage 1, which is characterized by an increase in right ventricular pressure without evidence of right ventricular hypertrophy. Right ventricular systolic pressure is elevated between 35 and 90 mm. of mercury. Right ventricular diastolic pressure is frequently 3 to 5 mm. of mercury. If the right ventricle is in failure, its diastolic pressure becomes higher. The systolic pressure of the pulmonary artery is about the same as that of the right ventricle, while the diastolic is frequently 10 to 30.[5]

There appears to be a direct relationship between the mean pulmonary artery pressure and the electrocardiographic patterns in chronic cor pulmonale. It is stated that almost all cases with the pattern of right ventricular hypertrophy in the electrocardiogram have a mean pulmonary artery pressure greater than 30 mm. of mercury. On the other hand, there are patients with mean pulmonary artery pressure greater than 30 mm. who do not have the pattern of right ventricular hypertrophy.[23] Pulmonary artery pressure is highest in patients with the lowest oxygen content, that is, subjects with cor pulmonale who are not polycythemic.[24]

SUMMARY AND CONCLUSIONS

The practical applications of cardiac catheterization are those of arriving at a clinical diagnosis and evaluation of patients for possible cardiac surgery.

The catheterization data in congenital heart disease have been briefly discussed and correlated with clinical findings. In acquired heart disease the chief use of cardiac catheterization has been in the evaluation of patients prior to mitral commissurotomy or valvuloplasty. Findings in mitral stenosis and regurgitation and tricuspid stenosis and regurgitation have been discussed.

Criteria for the diagnosis of aortic stenosis or regurgitation on the basis of brachial arteriograms have been listed.

Confirmation and evaluation of the diagnosis of pulmonary heart disease are readily available with right heart catheterization.

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Experiences with Transaminase Determinations in Coronary Disease

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Two fundamental problems confronting the cardiologist in myocardial infarction are: (1) A means of determining the size of the area involved and (2) a method of corroborating equivocal electrocardiographic findings in the presence of a classical clinical syndrome. The latter problem is manifested in such pre-existing entities as bundle branch block, superimposed old infarction patterns, deep subendocardial infarctions, and in the differential diagnosis of pulmonary embolism with electrocardiographic changes. The former category, a means of determining the size of infarctions, is a significant problem since it is recognized that the electrocardiogram is limited in providing such information.

At the 1954 meeting of the Second World Congress of Cardiology a new approach to these problems was presented and a method now appears to be available which will provide the necessary information for their solution.[1]

Concentration of the enzyme, glutamic oxaloacetic transaminase, normally found in the serum in an average concentration of 22.1 units per ml. (plus or minus 6.8), rises in myocardial infarction within 12 hours and returns to a normal level within 4 to 6 days.[2] There is no relationship between this test, determination of the sedimentation rate, and the C-reactive protein test. Damage to liver tissue also causes an increase in the enzyme activity, and it appears that a quantitative test for evaluating liver damage is now available for the first time. The height and duration of the enzyme concentration is roughly proportional to the amount of heart or liver damage.[2]

In angina pectoris or coronary insufficiency the enzyme activity is normal, unless associated with heart muscle cell damage. It has been found:

> . . . in both the experimental animal and in human clinical studies that when coronary insufficiency is acute but unassociated with myocardial tissue injury such as results from prolonged coronary insufficiency, there is no release of transaminase into the serum. However, if the coronary insufficiency is of such duration or of such severity as to compromise the cellular integrity of the myocardial tissue, there does result a liberation of transaminase and a rise above the normal range in the serum.[3]

In toxic, infectious, homologous serum hepatitis the elevations of the enzyme level are so characteristic as to be almost diagnostic. In obstructive jaundice there is a moderate rise, but a prompt fall occurs following surgery. This test of enzyme activity appears to be a relatively sensitive index of liver metastasis.[2] According to all current studies, the level of the enzyme activity in liver disease does not parallel the tests of liver function now in use.

We have recently been employing this new test at the Osteopathic Hospital in Kansas City, and we feel the results which are demonstrated in the following cases illustrate its usefulness as a diagnostic and prognostic agent.

Case 1. A 62-year-old man showed electrocardiographic changes characteristic of an anterior wall infarction. The maximum level of serum glutamic oxaloacetic transaminase of 229 units was reached toward the end of the second hospital day. There then followed a precipitous drop to 34 units on the fourth day. In view of this high level of enzyme activity, it was concluded that extensive infarction had occurred. The severity of the clinical picture was consistent with the laboratory findings. It is interesting to note that the C-reactive protein test was negative as late as the fourth day and that the sedimentation rate showed no correlation with the serum transaminase level.

Case 2. This 33-year-old male patient also demonstrated an anterior wall infarction with a classical clinical syndrome associated with severe precordial pain. The electrocardiogram showed more pronounced changes than those in Case 1, and ordinarily one would have considered that a large area of infarction was present. Transaminase studies in this case, however, showed a maximum rise to approximately 55 units on the third day with a return to normal level on the fifth day. The sedimentation rate showed no correlation with the enzyme level, and the C-reactive protein level was only 1+. In this case it was concluded that only a small area of infarction had developed.

Case 3. A 64-year-old man demonstrated a posterolateral infarction with a right bundle branch block. His clinical symptoms were very severe, and a level of 96 units of serum transaminase indicated an infarction of moderate size. In this case, too, the C-reactive protein test was negative. The sedimentation rate showed a rise after the first day, but there was no correlation with the enzyme level.

Case 4. Serial electrocardiograms showed a persistent coronary insufficiency pattern without evidence of infarction in a 66-year-old man. The C-reactive protein test was negative; the sedimentation rate was elevated but the rate of approximately 15 mm. of fall in 60

minutes was constant. The transaminase level rose to approximately 65 units on the second day and remained at a relative plateau until the fifth day when a precipitous fall occurred. This patient undoubtedly developed changes in the cellular integrity of the myocardial tissue because of the prolonged insufficiency which resulted in liberation of transaminase with persistent elevation above normal for several days.

Case 5. In this case carcinoma of the head of the pancreas was confirmed at autopsy of a male patient. Only one transaminase level determination (93 units) was possible since the patient died approximately 3 days after admission to the hospital. The icteric index was 336 units, and the serum alkaline phosphatase was 28.4 units. Results of van den Bergh tests were: indirect 56.8, direct 41.8. The cephalin flocculation test was 2+ after 48 hours. The prothrombin time which was 35 seconds the first day returned to normal within 24 hours after vitamin K was administered intravenously. The moderate liver damage indicated by this test suggests an absence of any significant metastatic changes to the liver. This was confirmed at the postmortem table and by microscopic studies of the liver. Had surgery been possible, the transaminase level would have probably dropped to normal range within 24 to 48 hours after surgery.

SUMMARY

A new test measuring the activity of the enzyme, glutamic oxaloacetic transaminase, is now available which enables the clinician to determine roughly the size of myocardial infarctions and more accurately diagnose them during the first few days when the electrocardiographic findings are equivocal, or when factors are present which complicate the interpretation of the electrocardiogram. This enzyme test also appears to offer a means of more accurate diagnosis of liver disease and provides a means of quantitatively measuring the extent of liver damage. The height and duration of the enzyme concentration are roughly proportional to the amount of heart or liver damage.

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Present-Day Medical Management of Pulmonary Tuberculosis*

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HISTORY

In order to appreciate fully the current management of the tuberculosis patient I feel that it is necessary to review briefly the chronology of the disease. Since the establishment of the first successful sanatoria in the latter half of the nineteenth century, slowly but consistently adjunctive measures have been put to use which have resulted in a great reduction in the mortality rate from this disease and to some extent a decrease in the morbidity. To a large degree old methods of management have not been discarded for new ones; rather, new methods have been added to the old.

Hippocrates in 400 B.C. was the first to mention a pulmonary disease called phthisis. Galen around 200 A.D. described phthisis as an ulcer of the lungs and warned against contact with those suffering from it, thus recognizing its contagiousness. The notion of contagion and that of prophylaxis probably were not given much consideration before the middle of the eighteenth century when Ferdinand VI of Spain ordered the reporting of phthisis and the burning of personal effects of deceased consumptives. Purges, bleedings, emetics, and enemas were standard treatments of pulmonary hemorrhage.[1]

In 1820 George Bodington in England was the first to apply sanatorium treatment. He paid little attention to the rest but insisted on fresh air. Criticism from the medical profession forced him to close his establishment.[1] Nineteen years later, in 1859, Brehmer opened what proved to be the first successful sanatorium in Germany and prescribed fresh air, exercise, and hydrotherapy. Peter Dettweiler, Brehmer's patient and later his pupil, in 1876 founded the German Peoples' Sanatorium and established the rest cure program at Faulkenstein, Germany. The sanatorium idea then spread rapidly.

In 1865 Villemain proved by animal experimentation that tuberculosis is an infection caused by an inoculable agent. By this time, Pasteur had stimulated interest in bacteriology, and in 1882 Robert Koch announced his discovery of the tubercle bacillus. There was more progress in the control of tuberculosis in the next 30 years than there had been in all the preceding centuries.[1]

In this same year, 1882, Carlo Forlanini conceived the idea of artificial pneumothorax; 3 years later DeCerenville performed the first rib resection to collapse the underlying tuberculous lung.[1] However, collapse therapy was not practiced on a large scale until after the first World War. The utilization of x-ray in diagnosis suffered a similar delay. Roentgen rays were discovered in 1895, but they were not commonly used in the study of the chest before 1920.[1]

Dr. Edward Livingston Trudeau, himself tuberculous, who had benefited by rest and fresh air, established the first sanatorium in America in upper New York state in 1885.[1] In 1898 in Rutland, the state of Massachusetts opened the first public sanatorium in North America. Now there are in the neighborhood of 100,000 beds at the disposal of the tuberculous in the United States. This has probably been the greatest factor in lowering the incidence of tuberculous infection and disease. Great strides were made in lowering the mortality figures for tuberculosis from 1900 to 1940. This was the era devoted to rest of the lung by means of prolonged bed rest and temporary and permanent col-

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lapse methods. During this 40-year period the death rate in the United States dropped from 200 per 100,000 population to 46 per 100,000. In Boston, around 1850, the rate was 400 per 100,000, which was about 22 per cent of all deaths.

Other very important measures played a large part during this period in making progress against this disease. Among these were the reporting of open cases to boards of health, antituberculosis associations, pasteurization of milk, education of the laity, and more generalized use of x-ray in hospitals, in private practice, and in mass surveys.

In 1934 the first successful lobectomy was performed for tuberculosis.[2] This opened a new approach in eradicating localized areas of the lung resistant to other forms of treatment. Other treatment was not, of course, abandoned, but surgical resection was added to the armamentarium. Along about this same time, sulfa drugs and penicillin raised some hopes, but they were soon abandoned as ineffective against the tubercle bacillus.

The year 1947 saw the beginning of the use of the chemotherapeutic and antibiotic agents which are playing a major role in the management of the tuberculous patient today.

THERAPY

Streptomycin.—

Streptomycin was the first of these antituberculosis agents which was found to have definite bacteriostatic properties and, in large quantities, even bactericidal effects.[3] However, the larger quantities had prohibitive toxic effects in the form of vestibular and auditory nerve dysfunction. Occasional rash and fever were also encountered.

The most commonly used dosage schedule for streptomycin today is 1 gram twice a week or every third day. Patient response to this drug is usually good. Patients gain weight, have diminished sputum which in many cases becomes negative for bacteria, and there is radiologic improvement. Unfortunately, after this drug began to be widely used, bacterial resistance to streptomycin was all too frequently encountered. Interrupted dosage schedules, such as the present every-third-day routine, postponed the appearance of resistant organisms.

It was soon discovered that para-aminosalicylic acid (PAS) when given orally in dosages of 10 to 12 grams daily considerably prolonged the period from the beginning of streptomycin therapy to the development of bacterial resistance.[4] Gastrointestinal upset is not infrequently encountered with PAS.

If definite intolerance occurs, Terramycin in a dosage of 1 gram daily can be used as a substitute with no higher incidence of emergence of streptomycin-resistant strains of tubercle bacilli.[5] Terramycin, however, when used with isoniazid, which will be discussed later, abolishes the bactericidal activity of the latter.[3] Streptomycin is much more effective against extracellular organisms than intracellular.

Dihydrostreptomycin was introduced in the hope of minimizing toxicity in long-term therapy. Though less vestibular nerve dysfunction was noted, more auditory disturbances occurred which often progressed even after administration ceased. No difference in therapeutic efficacy is seen and no significant difference observed in the frequency of emergence of bacterial resistance.[6] A mixture of the two drugs is preferred by some.

Isoniazid.—

Isoniazid (isonicotinic acid hydrazide, INH) came into prominence 2 or 3 years after streptomycin and PAS therapy had been fairly well standardized. It was heralded as almost a miracle drug, especially in lay publications. It was dramatic in its effect on poor-risk cases which had ceased to improve on other therapy, including streptomycin and PAS. Effects were good in regard to weight gain, sputum reduction and conversion, et cetera, but as with other drug treatment, bacterial resistance developed. Consequently, isoniazid was relegated to its proper position as one of the best available antituberculosis drugs instead of a panacea.

Subsequent laboratory and clinical trials have revealed the following data on the drug: The most widely used dosage is 5 mg. per kilogram of body weight (150 to 300 mg.) daily in two or three doses. Isoniazid does not exert an immediate effect on the growth of tubercle bacilli but allows at least one more generation of organisms to appear before growth is arrested. This type of bacteriostasis is similar to that exerted by the sulfonamide drugs and suggests that the formation of an essential metabolite is being depressed. The action is initially bacteriostatic rather than bactericidal, and massive quantities of the drug are no more effective than are smaller amounts.[7] The most unfavorable feature of isoniazid in tuberculosis is the development of bacilli resistant to the drug. It is even more marked than that observed against streptomycin.

Combining isoniazid with streptomycin does not reduce the development of resistance in bacilli against isoniazid as much as against streptomycin. There is a considerable delay in the development of streptomycin resistance as a result of the presence of isoniazid; it is even more marked than the reduction in resistance produced by PAS.[8] Isoniazid alone is not as effective as streptomycin and PAS, but isoniazid and streptomycin are as effective as or more so than streptomycin and PAS.[9] PAS as well as streptomycin delays bacterial resistance to isoniazid.[10]

In the first reports on the use of isoniazid, note was made of the striking improvement in the patients' sense of well-being, exhibited primarily by euphoria and an increase in psychomotor activity, even to the point of precipitating an unusual increase in the number of disciplinary problems among these patients.[10,11] The effects of this drug on psychotic tuberculous patients have been investigated. Improvement was seen in one investigation.[12] Others have found no significant mood changes in any group that can be attributed to isoniazid.[13]

Miliary and meningeal tuberculosis are no longer considered hopeless infections. Results are very good with streptomycin and PAS[14] and even better with the addition of isoniazid.[14,15] A combination of the drugs is probably best, and a course of at least 6 months' therapy should be given regardless of spinal fluid findings in order to protect against relapse. Thus far meningitis has rarely if ever complicated isoniazid treatment. Intrathecal streptomycin is rarely used.

In the early months of the clinical use of isoniazid, much was written concerning the toxic effects of the drug.[10] However, they have proved to be minor and unimportant if the dosage is kept at the most acceptable level of 5 mg. per kilogram of body weight.[16] Peripheral neuritis, seen rarely in individuals receiving the 5-mg. dosage, is believed to be due, at least in part, to vitamin B_6 (pyridoxine) deficiency.[17]

Pyrazinamide.—Pyrazinamide, a nicotinic acid derivative related chemically to isoniazid, has been under laboratory and clinical observation since 1952. It seems to be the opinion of the majority that this drug is perhaps the most potent of the antituberculosis medications, but its use is not warranted at this time because of its toxicity, manifested frequently in the form of hepatitis and fatal hemoptysis.[18,19]

Iproniazid.—The isopropyl derivative of isoniazid, iproniazid, is really the parent compound of isoniazid. As reported by Cheifetz and his associates,[20] it is a more potent antituberculosis agent than isoniazid and causes dramatic subjective improvement in less time, but toxic manifestations, such as dizziness, muscular twitching, and other relatively minor symptoms, within a few months have discouraged its use. They hope, however, after more experimental work is done with it, to investigate use of a combination of iproniazid and streptomycin or PAS during the first few weeks of hyperacute disease preliminary to placing the patients on less toxic antimicrobial agents.

Viomycin.—Another antituberculous agent, viomycin, is believed to be an antibiotic substance of a new strain of Streptomyces. This drug has been found to be effective against streptomycin-resistant organisms when given in a dose of 2 grams twice weekly combined with 12 grams of PAS daily. Viomycin is rated below streptomycin and PAS in effectiveness.[21]

Cycloserine.—A new drug, Cycloserine, (D-4-amino-3-isoxyazolidone) was reported on by Epstein at the Fourteenth Conference on the Chemotherapy of Tuberculosis held in Atlanta, February 7-10, 1955. There is much interest in this drug which is also known as Oxamycin, but only meager data are available at present. The Veterans Administration is reported to have arranged a study on its therapeutic efficiency.[22]

Corticotropin and Cortisone.—Numerous references in the literature suggest that the disadvantages of corticotropin and cortisone in the treatment of tuberculosis should be re-evaluated in light of recent evidence that in some cases they appear beneficial.[23-25]

Collapse Therapy and Pneumoperitoneum.—As the direct result of more effective chemotherapeutic agents the incidence of collapse therapy has shown a marked drop since 1948.[26] In many instances the effectiveness of antimicrobial agents in cavity closure has made pneumothorax, with its too high incidence of failure and complications, less often warranted. Pneumoperitoneum, however, as adjunctive therapy to chemotherapy, has shown an increase in over-all usage.

Surgery.—

Surgical resection still has a position of high regard in the therapy of pulmonary tuberculosis. As a rule, surgery is not advocated until after at least a 4- to 6-weeks' trial of chemotherapy. The following is a comprehensive list of indications for surgical intervention:[27,28]

1. Extensive areas of localized tissue destruction
2. Bronchostenosis with infection distal to the stenosis
3. Failure of a cavity greater than 4 to 5 cm. in diameter to close after several months of chemotherapy
4. When portions of the lung may be saved by decortication
5. When patients seem unlikely to accept prolonged hospitalization
6. Resistant lower lobe cavities
7. Large tuberculoma.[27,28]

BCG Vaccine.—A discussion of the management of pulmonary tuberculosis would be incomplete without some mention of BCG vaccine. Reports on the effectiveness of this vaccination program in certain countries of Europe seem irreproachable. However, the Division of Chronic Diseases and Tuberculosis of the Public Health Service in 1953 quoted the following statement made by Anderson in 1950:

> . . . the Public Health Service could recommend the use of BCG only for selected groups with known high risk of exposure to tuberculous infection. Tuberculosis had been declining sharply for many years and there was no reason to think it would not continue to decline, perhaps even more rapidly. Moreover, it was not clear that the advantages of using BCG would outweigh the disadvantages of losing the tuberculin test as a diagnostic and case-finding tool. It was believed that mass vaccination programs in this country could be justified only for the purpose of making carefully documented studies to determine the value of BCG in tuberculosis control.[29]

BCG vaccine is still a very controversial issue in the United States.

SUMMARY AND CONCLUSIONS

Combined chemotherapy is being used in the treatment of about 98 per cent of pulmonary tuberculosis today. This includes cases in all classifications from minimal through far advanced. Today there are probably more patients receiving streptomycin and PAS than any other combination, although apparently there is a definite trend toward the use of a streptomycin-isoniazid combination. Many competent men withhold isoniazid in the minimal or moderately advanced case until resistance to other successful agents is encountered. Others feel that isoniazid should be used immediately, for example, in the person who has recently become tuberculin positive but as yet shows no roentgen evidence of disease and who has no symptoms. Current drug therapy is far from ideal because of too early development of resistance by the tubercle bacillus and instances of relapse, and the drugs are not devoid of toxicity.

Surgical resection is well established in removing localized areas of the lung resistant to other measures. Temporary collapse procedures, although used less often than formerly, are still useful adjuncts. Bed rest remains essential although it can be modified in some instances in cases responding well to chemotherapy.

In considering the whole program of tuberculosis today, it must be remembered that even though mortality is steadily decreasing, about four new cases are reported for every death. The tubercular patient is being kept alive, but he is infecting other people before he can be isolated and treated. One of the most pressing problems continues to be early diagnosis and treatment.

A thought-provoking idea toward this goal is outlined by Myers:[30] Since no one can say with accuracy how long active infection has been present in a patient found by mass x-ray survey, if tuberculin tests were extended from infancy to old age for the first time the extent of residual tuberculosis could be measured, and predictions could be made of where new cases would develop. As both the death rate and case rate decline, the tuberculin test becomes the most valuable case-finding method, not only as a guide to the source of infection but as a label on those persons who require annual x-rays to detect the first indication of active clinical disease.

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NONPROFIT HOSPITALS AND THE CORPORATE PRACTICE OF MEDICINE

On November 28, 1955, Judge C. Edward Moore of Polk County District Court, Des Moines, Iowa, rendered a decision in a lawsuit initiated by the Iowa Hospital Association and its thirty-four member nonprofit hospitals which it now appears will be appealed to the Supreme Court of Iowa for final appellate review. This appeal will thus place squarely before the Iowa Supreme Court a legal controversy whose ramifications can have great effect upon the pattern of medical and hospital care in this country in the years ahead. The Iowa Hospital Association and its thirty-four members against whom the decision was rendered in the trial court have indicated that they feel that a case of such national importance should not be allowed to stand without appeal.

This case had its origin in an opinion of the Attorney General of Iowa dated February 19, 1954, to the effect that nonprofit hospital corporations were engaging in the illegal corporate practice of medicine contrary to the Medical Practice Act of Iowa when they furnished pathologic and radiologic services to patients and billed the patients for such services while having a licensed physician retained as pathologist or radiologist on a salary or a fixed fee basis. The hospitals alleged that providing such laboratory services to patients was a hospital service which was authorized by law under the Iowa Hospital Licensing Law. The opinion of the Attorney General had been requested by the Iowa State Board of Medical Examiners. A subsequent continuance of the dispute between the hospitals and the doctors resulted in the filing of the lawsuit in question.

Judge Moore's decision was rendered only after a 13 week trial at which both sides presented the testimony of leaders in the fields of hospitals and medicine. Much of the evidence related to the character of services provided by modern nonprofit hospitals and the need for such services. Likewise the defendant Board of Medical Examiners and the Iowa Medical Society presented witnesses to testify as to the status of pathology and radiology as recognized specialties in the practice of medicine. They contended that since pathology and radiology are medical services, such services may be furnished only by physicians licensed under the law to practice medicine and not by other unlicensed persons or corporations.

It is unnecessary, in view of the fact that the District Court decree is to be appealed, to present in detail the various Findings of Fact and Conclusions of Law. The Findings of Fact, it may be said, established the present custom and practice of hospitals to provide the laboratory facilities, space, and equipment needed in the modern care of illness and to staff such facilities with qualified technicians. The judge further found that the hospitals are in increased control of the services provided through furnishing the facilities as well as through compensation arrangements with physicians, but found that there had been no actual interference by the hospital trustees or administrators with the professional services of the pathologists and radiologists.

As a matter of law, the trial court decision holds that a nonprofit corporation is held to the same accountability under the Medical Practice Act that has historically been applied to nonlicensed persons and profit hospital corporations. The right to practice medicine, it was held, is a personal one that can only be possessed by an individual and that the position of nonprofit corporations is not unique or different. The Hospital Licensing Law, it was ruled, did not grant any legal exemption to hospitals from the provisions of the Medical Practice Act. Most of the reasons given in the decisions in other cases condemning the corporate practice of medicine, the judge said, were applicable to nonprofit corporations (despite the Findings of Fact to the effect that no abuses of privileges by nonprofit hospitals had been found). The long-continued practice of hospitals operating pathology and radiology laboratories did not change the law. Pathologists and radiologists violate the fee-splitting

prohibitions of the law when they permit hospitals to bill for their medical services without the consent of the patient, and hospitals may well likewise be illegally holding themselves forth as being engaged in the practice of medicine. The work done by the pathologist, radiologist, and the technicians working in the laboratories is the practice of medicine and can only be done by or under the control of licensed physicians. Hospitals may own and maintain pathology and radiology laboratories, but they may not bill for the services provided by the personnel needed to operate them inasmuch as such services are the practice of medicine. Hospitals can, however, receive just compensation for the use made of such laboratories.

The decision thus goes on to review by the Iowa Supreme Court. If the decision of that Court covers all the issues involved in the proceedings of the trial court, nonprofit hospital corporations will have a new and undoubtedly enlightening view of their place in the systems of law and medicine in this country.

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SUBCOMMITTEE URGES HEALTH INSURANCE

A Subcommittee on Low-Income Families, consisting of Senator John Sparkman, of Alabama, Senator Ralph E. Flanders, of Vermont, and Representative Augustine B. Kelley, of Pennsylvania, on December 28, 1955, reported its findings and recommendations to the Joint Committee on the Economic Report, Senator Paul H. Douglas, of Illinois, Chairman, in part as follows: (Senate Report No. 1311)

An outstanding gap in social insurance coverage is income loss due to ill health, however caused. We believe that the Federal Government possesses direct responsibility for expanding social-insurance and other programs to provide protection against the contingencies of temporary disability and permanent total disability. Such provisions should mesh, not conflict with State programs already established.[1]

We recommend—(1) The Congress consider legislation to establish social-insurance programs covering the risks of temporary and permanent total disability.[2] (2) The appropriate congressional committees study the desirability and feasibility of dovetailing such programs, if established, with the workmen's compensation acts of the various States; such study will necessarily entail a review and evaluation of the adequacy of the existing workmen's compensation programs.

Adequate health care—medical and dental services and hospitalization—is not received by many low-income families for one of two reasons, or for a combination of these reasons: (1) inability to pay, and, (2) particularly in isolated rural areas, unavailability or inaccessibility of adequate facilities. In addition to those with the lowest family income status, many other families who provide for their normal day-by-day needs are unable to pay for adequate health care out of their own resources. We believe that the ultimate cost of inadequate health care to the Nation, in terms of lessened productivity as well as income loss, can be substantially reduced by measures designed to increase preventive and curative health care received by the medically needy.

We recommend—(3) That the Federal Government, in cooperation with the States and private groups, develop a comprehensive health program covering the following: (a) Stimulation of means whereby families in rural areas may secure adequate health care; (b) Provision of additional funds to provide for adequte recruiting and training of professional workers in the field of health care; (c) Reduction in the cost to the individual of comprehensive health protection. This may necessitate contributing part or all of the cost of approved insurance programs for low-income families. The Congress may wish to consider whether it may be necessary, in order that voluntary health plans reach all of the population, to provide Federal financial aid to those in the low-income groups who are unable to purchase such protection; additional funds alone, however, would be useless to millions of our people in rural areas where there is a lack of doctors, nurses, and hospital beds; (d) Extension of the school-lunch and milk programs, and the distribution of surplus commodities to needy families; and (e) Expansion of Federal participation in public-assistance payments for medical care.

We believe that with some additional changes in the federally aided public-assistance programs, current inequities will be eliminated and the way opened to aid a larger proportion of families with low economic status. Aid rendered through the public-assistance programs—including nonfinancial services as well as direct income supplements—can and should serve 2 functions: (1) to provide subsistence to needy families and individuals; and (2), by means of the nonfinancial services in particular, to assist families in their efforts to improve their productive capacity and earning power.

We recommend—(4) That the following changes be considered in the Federal grant-in-aid program of public assistance: (a) Establishing a single, unified system of Federal grants for general public assistance in place of the current and separate programs which, according to evidence presented to the subcommittee, tend to restrict unnecessarily the types of need for which Federal funds are available; (b) Basing Federal grants-in-aid for general public assistance on an equalization formula which takes into account the relative financial needs of the various States and State differences in per capita income; (c) Lowering the maximum residence requirements of public-assistance recipients which the States can impose; and (d) Making the Federal grants for child-welfare services available to all areas rather than limited as they now are to specially designated areas.

1. Workmen's compensation acts of the States provide for cash payments to some workers for work-incurred disability. In addition, four of the States have established insurance plans for temporary illness or disablement not arising out of the covered worker's employment.

2. "The undertaking must be approached with great caution. Many insurance companies have had to discontinue disability benefits owing to the difficulty in defining 'disability', whether temporary or permanent, in any given case."—Senator Ralph E. Flanders.

PUBLIC HEALTH SERVICE EXPANDS COMMISSIONED RESERVE

A major expansion and reorganization of the Commissioned Reserve of the Public Health Service is in process as a national defense measure, due to additional defense responsibilities delegated by the Federal Civil Defense Administration.

As a result, numerous physicians, including osteopathic physicians, are to be appointed in the Commissioned Reserve. These appointments are made on the basis of professional experience and training and require no professional examination.

The Commissioned Reserve exists to provide the Nation with an organization of professional people prepared in advance to mobilize instantly to meet the extraordinary public health demands created by grave national emergencies. At such times a Commissioned Reserve Officer has the opportunity of serving his country in the professional capacity for which his training and experience have fitted him, especially when mobilization may affect every able-bodied person in the country. This is in essence the principle of the Commissioned Reserve.

For further information write Dr. Chester D. Swope, Chairman, A.O.A. Department of Public Relations, Farragut Medical Building, Washington 6, D.C.

COGGESHALL NEW HEALTH ASSISTANT

Dr. Lowell Thelwell Coggeshall has been appointed by the President as Special Assistant for Health and Medical Affairs to the Secretary of Health, Education, and Welfare. He will succeed Dr. Chester S. Keefer of Boston, who resigned August 1, 1955.

Dr. Coggeshall has been dean of the University of Chicago Division of Biological Sciences since 1947. He will be on leave from the University of Chicago.

Before becoming dean of the Division of Biological Sciences, which comprises the basic and applied scientific research and clinical activities of the University, including the medical school, Dr. Coggeshall was chairman of the Department of Medicine at the University. Until July 1 of last year, he also was chairman of the Committee on Medical Sciences of the Department of Defense, and he is, presently, chairman of the Medical and Scientific Committee of the American Cancer Society. He has been the Frederick H. Rawson Professor of Medicine at the University of Chicago since 1947.

A native of Indiana, Dr. Coggeshall was born in Saratoga in 1901. He received his medical degree at the University of

Indiana in 1928 where he also was awarded the degree of Doctor of Laws in 1948. Following his internship at the University of Chicago Hospital, he was named instructor and then assistant professor of medicine. From 1935 to 1940, he was a staff member for research in tropical diseases, International Health Division, of the Rockefeller Foundation. He was professor of Preventive Medicine of the School of Public Health, University of Michigan, from 1940 to 1941, and was chairman of the Department of Tropical Medicine, University of Michigan Medical School, from 1942 to 1944. He then returned to the University of Chicago as head of the Department of Medicine.

The office of Special Assistant for Health and Medical Affairs was created in the 1953 Reorganization Plan which established the Department of Health, Education, and Welfare. The Plan states:

> There shall be in the Department a Special Assistant to the Secretary (Health and Medical Affairs) who shall be appointed by the President by and with the advice and consent of the Senate from among persons who are recognized leaders in the medical field with wide nongovernmental experience, shall review the health and medical programs of the Department and advise the Secretary with respect to the improvement of such programs with respect to necessary legislation in the health and medical fields and shall receive compensation at the rate now or hereafter provided by law for assistant secretaries of executive departments.

FTC APPROVES TPC FOR INSURANCE

Following a ruling by a Federal Trade Commission hearing examiner that the McCarran Act withdraws Federal control and sanctions "State control of the business of insurance of every phase thereof except where such State regulation [is] either as a matter of fact or of law, impossible or clearly ineffective . . .", and that the Commission does not have jurisdiction over accident and health insurance advertising when it is adequately regulated by the states, the Commission on December 15, 1955, adopted a motion by Commissioner Lowell B. Mason, authorizing a Trade Practice Conference to draw up rules to safeguard the public from false and misleading advertising of health and accident insurance.

Commissioner Mason will supervise the proceedings of the Conference, which will be handled by FTC's Division of Trade Practice Conferences.

Invited to the Conference will be representatives of all state insurance departments and the insurance industry, as well as other interested parties.

Chairman John W. Gwynne, in announcing the Commission's action, declared:

> In our efforts to protect the public from misleading advertising of health and accident insurance, we have kept in close contact with the State insurance commissioners. Their goal is the same as ours, and they are fully alert to the problem as are the insurance companies themselves. The time has arrived when a trade practice conference would offer an early and satisfactory solution to the problem.

A nationwide investigation of insurance in the hospitalization, accident, and health field was launched by the FTC in December, 1953. Ten months later, on October 19, 1954, the Commission issued complaints against seventeen insurance companies. Other complaints followed to bring the total to forty-one. Of these, four have accepted consent orders to discontinue the challenged advertising of their insurance policies. The others have denied that the FTC has jurisdiction over their advertising, saying they are regulated adequately by the states. They also have denied any deception in their advertising.

Current Literature

THE CRAIG VERTEBRAL BODY BIOPSY

The lack of proper instruments and training having long prevented biopsy of vertebral bodies from becoming a proper tool for the orthopedic surgeon, Frederick Stephen Craig, M.D., describes a kit of instruments and a versatile technic for successful vertebral body biopsy in an article in the *New York State Journal of Medicine,* December 1, 1955.

The Craig vertebral body biopsy instrument kit consists of a cannula, a sharp smooth cutter, a removable wrench, a toothed cutter, an infiltration needle, a trocar, a stylet, and a sharp worm. These tools make it possible to secure adequate material, whether cartilaginous or soft, with a central section free from surface artefacts and with little threat of morbidity or damage to the nerve roots. Because re-entering a vertebra several times is so often required, cutting instruments are introduced through a cannula held firmly in place against the vertebral body. The cutters and cannula are adapted for a plain-tipped syringe which makes aspiration and infiltration feasible. The cannula is introduced over a blunt-pointed trocar which pushes nerves and blood vessels aside. Tissue in front of the cutter is palpated with a blunt stylet that expels the section secured into Bouin's solution. The cutter may become plugged with cortical bone, necessitating cutting through, expelling it, and re-entering in order to obtain a soft tissue specimen. A sharp worm makes it possible to secure soft tissue, which ordinarily is difficult to withdraw, in the cutters. The removable wrench fits on the ends of cutting instruments so that sclerotic vertebrae can be entered by increasing the force applied to them.

The author prefers a freehand approach to the less flexible needle-guide technic. An 8.5-cm. wheal is raised over the lumbar spine, and a no. 22 needle is introduced at a 45-degree angle to the skin for infiltration of 1 per cent procaine until bone is contacted, at which point 2 per cent procaine is introduced. Bone met at one-third the length of the needle is transverse process, and at one-half the length, vertebral body. Anteroposterior and lateral roentgen films are used to guide the passage of the trocar. It is passed along the same pathway as the needle or along a new pathway. The point of the trocar should rest on the posterolateral aspect of the body, anterior to the neural canal. The cannula is passed with a rotary motion over the trocar until bone is contacted and is then held firmly in place while the trocar is removed, the cutter introduced, and sections taken. The length of section and its retention can be determined with the help of the stylet. Sections not impacted in the cutter may be aspirated or withdrawn with the help of the sharp worm.

The author has experienced three failures to secure biopsy tissue, once because of a thick-walled tuberculous abscess and twice because of such pronounced destruction that bone resistance was never met, in one case open biopsy disclosing such highly cellular metastatic tissue that it could not be held even with thumb forceps for cutting. Only once has he injured a nerve root.

POSTMENOPAUSAL BLEEDING

Postmenopausal bleeding is evidently far more serious than abnormal bleeding during the menopause, although abnormal bleeding at any age may be a sign of malignant pelvic disease. John B. Montgomery, M.D., and Joseph P. Long, M.D., discuss postmenopausal vaginal bleeding in 201 patients in *The Medical Clinics of North America,* November, 1955.

Vaginal bleeding, however scant, if it occurs after more than 6 months of amenorrhea, is significant. It may stem from the bladder, urethra, rectum, or vaginal wall. If it is uterine in origin, it may be considered abnormal when the regular menstrual flow is excessive, irregular or prolonged, or at shortened intervals, or if it occurs after the menopause.

A study of the causes of vaginal bleeding in 201 consecutive patients disclosed that 19 had atrophic vaginitis, 59 dys-

functional uterine bleeding (with no organic lesion, 20 patients having received estrogenic hormones, however, either orally or by injection), 24 erosion of the cervix, 25 endocervical polyps, 1 pyometrium, 1 endometrial and endocervical mucocele, 17 uterine myoma, 12 endometrial polyps, 4 urinary tract causes, and 1 prolapse of the fallopian tube after vaginal hysterectomy. In all 163 the causes were considered benign. In the remaining 38 (18.9 per cent) the causes were malignant, with squamous cell cervical carcinoma in 12, endometrial adenocarcinoma in 21, ovarian adenocarcinoma in 4, and ovarian granulosa cell tumor in 1. The causes of dysfunctional uterine bleeding are discussed.

Pelvic examination should include microscopic study of a specimen of catheterized urine, accurate inspection of the vulva, vagina, and cervix, bimanual palpation of the uterus and adnexa, anal inspection consisting of digital palpation of the anal canal and lower rectum and, in some instances, proctoscopic study.

A helpful adjunctive measure is cytologic study of smears from the posterior vaginal fornix and cervical scrapings. Other important diagnostic procedures include office biopsy of cervical tissue and, preferably, surgical biopsy in the anesthetized patient, to excise the entire squamocolumnar junction with underlying cervical tissue by circular coning incision extending into the cervical canal from which preparation of multiple blocks is possible.

Slight vaginal bleeding, in senile vaginitis for example, may be treated conservatively with lactic acid douches, local antibiotic medication, or administration of estrogenic hormones in suppository or cream form. Cervical biopsy and thorough diagnostic curettage are indicated in any patient with a cervical lesion or with bleeding from the uterine cavity. In such cases, whenever gross evidence of malignant growth is found, the authors routinely insert multiple 5-mg. capsules of radium immediately and 4 to 6 weeks later perform total hysterectomy and bilateral salpingo-oophorectomy if the histologic report confirms malignant growth. If it does not, the radium may be removed at once or, in suitable instances, left in place for a total dosage of 1,500 or 2,000 mg.-hours, an amount usually enough to destroy ovarian function and control nonmalignant uterine bleeding. Despite the controversy over such use of radium, the authors have found it to serve a useful purpose in the management of dysfunctional uterine bleeding in the early postmenopausal period if the primary diagnosis has been accurate.

If bleeding recurs after malignant disease has been ruled out and conservative measures tried, the indication for hysterectomy is clear-cut, particularly if more than 2 years have elapsed since the menopause. Before that time, the indications for surgical intervention are less definitive. Deplorable as are hasty and thoughtless decisions in favor of hysterectomy, the authors feel deep responsibility for detecting and removing early malignant lesions.

SHOULD THE PATIENT WITH A HEALED MYOCARDIAL INFARCTION AVOID PHYSICAL EXERTION?

In the December, 1955, issue of the *Journal of the American Geriatrics Society*, Lt. Col. Weldon J. Walker, MC, questions the belief that strenuous physical exertion causes myocardial infarction in an individual with pre-existing coronary atherosclerosis. He bases his doubt on the fact that numerous studies have shown that sedentary workers show a higher incidence of myocardial infarction than do physically active workers. In fact, most evidence indicates that physical activity protects against rather than promotes atherosclerosis. In the light of this information, the author wonders whether the alarming increase in death from coronary heart disease among American males might not be attributed to the mechanization of American industry with its resultant decrease in physical demands upon the workers.

In commenting on the occasional examples of coronary occlusion arising at the site of ruptured capillaries growing in atheromatous plaques, the author points out that there is no evidence to prove that the rupture was produced by increase in blood pressure due to exertion. Since the capillaries lie within the lumen of the blood vessel and are in fact supported by such pressure, it is not likely on theoretical grounds alone to expect an increase in intra-arterial pressure to rupture these capillaries. It seems, then, that the growth of capillaries into atheromatous plaques is a part of the atheromatous process and that rupture of the capillaries is sometimes a part of the degenerative process.

Undoubtedly the greatest factor contributing to the misconception that a "coronary" patient should avoid exertion and excitement is the failure on the part of the physician to differentiate in his thinking between angina pectoris and myocardial infarction and between acute myocardial infarction and healed myocardial infarction. In the acute phase of myocardial infarction, the patient is kept at bed rest because of the possibility of rupture through a softened myocardium. This is most likely to occur between the fourth and eleventh days following onset. Within a month, however, scar formation has taken place and the danger of cardiac rupture is no longer present. In the author's opinion, the only reasons for continuing restriction of a patient's activity after a firm scar has formed are (1) cardiac insufficiency, in which so much of the myocardium has been damaged or destroyed that the heart no longer works effectively as a pump, and there is dyspnea on exertion, and (2) coronary insufficiency, with angina or cardiac arrhythmia induced by effort.

In cases of healed myocardial infarction without residual cardiac or coronary insufficiency, the patient must understand clearly the reason for strict restriction during the acute phase and why it is no longer necessary after healing has taken place. Otherwise, the patient invariably continues to limit his activities, with a resultant building up of tension and anxiety which is often released by eating. Overeating produces weight gains, and the stage is set for progression of the atheromatous process and the patient's early demise.

If the physician, at the risk of possible lay criticism, would advise the healed patient to resume his former activities, about 75 per cent of these patients could be returned to productive employment. The author believes that it is very important that those persons who are otherwise without residual disability should not suffer needless invalidism through an unfounded fear of death from work.

RADIATION HAZARDS TO NONRADIOLOGISTS PARTICIPATING IN X-RAY EXAMINATION

Through carelessness and ignorance, many doctors needlessly, and oftentimes dangerously, expose themselves to x-rays or gamma radiation. The problem is becoming increasingly serious because more and more physicians are using some form of roentgenology in diagnosis. Unfortunately, many of these persons have had little or no training in the proper handling of such equipment. In the Jan. 7, 1956, issue of *The Journal of the American Medical Association*, Max Ritvo, M.D., and his associates point up some of the common hazards of radiation and show how they can be avoided.

The rays are particularly insidious because they are not detected by the senses. They are invisible, odorless, silent, produce no sensations as they pass through the body, and their deleterious effects may not present themselves for weeks, months, or even years. For this reason, they give untrained persons a false sense of security. Unfortunately, there is no antidote for overexposure. Only constant awareness of the danger and the use of safety devices and measures can reduce the amount of radiation injury that takes place.

The effects of overexposure to excessive amounts of radiation appear most frequently in the skin, the hematopoietic system, and the gonads. The hands, wrists, and forearms are the most common areas of skin irradiation. Effects on the skin range from erythema to ulceration and carcinoma. Hematologic manifestations of overexposure include leukopenia and, it is believed, a leukemogenic effect. The incidence of leukemia in radiologists is about 8 to 10 times greater than in other physicians. Exposure of the gonads to x-radiation may lead to im-

pairment of fertility and to sterility and may even produce genetic alterations in succeeding generations.

In an attempt to evaluate the amount of exposure which takes place during certain common roentgen examinations, a study was made with the use of pocket dosimeters and Victoreen ionization chambers attached to various parts of the bodies of nonradiologic personnel, such as surgeons and anesthesiologists. The procedures that were investigated included cystourethrography, angiocardiography, femoral arteriography and lumbar aortography, cerebral angiography, cardiac catheterization, bronchography, myelography, and hip-nailing.

The authors found from these studies that the problem of protection falls into two categories: (1) equipment and protective devices, and (2) safe habits. The latter is by far the more important. Knowledge of the danger is the first step in instituting safe habits, and such education and enforcement of safety regulations are the job of the radiologist. At Boston City Hospital, where many of these studies took place, no one is allowed to remain in the room during the time of tube activation unless his presence is essential. Those who must stay wear leaded aprons and are instructed to keep every portion of the body as far removed as possible from the irradiated field. This underlines the most important rule of safety which is distance.

Nonradiologic personnel not versed in x-ray safety technics should not take part in roentgen procedures continuously or at frequent intervals. Monitoring of all persons who may be exposed to irradiation frequently is also essential.

Proper installation of all roentgen equipment can do much to reduce radiation hazards. Cones and filters should always be provided for by the manufacturer, and leaded drapes and shields should be used where feasible. The need for a room of size suitable for maintaining sufficient distance between the walls and those in the room is often overlooked. Inadequate distance between the walls and ceiling and the radiologist may increase the dose he receives by 25 to 35 per cent. Improvements in the design of new equipment have done much to reduce major hazards. Much more is yet to be done in this field, however.

As more data on the effects of radiation are compiled and disseminated, it is hoped that greater emphasis will be placed on proper x-ray technics and good safety habits. In this way much needless suffering, and even death, will be prevented.

TUBELESS GASTRIC ANALYSIS

The determination of the presence or absence of hydrochloric acid in the gastric contents of patients with gastric lesions is of considerable diagnostic importance, yet the procedure is rarely performed because of insufficient understanding of the method, the patient's reluctance to swallow a tube, or the lack of trained assistants. In the December, 1955, issue of the *Archives of Internal Medicine,* John T. Galambos, M.D., and Joseph B. Kirsner, M.D., describe a simple tubeless gastric analysis technic, based on an evaluation of azure A indicator compound, which is suitable for reliably differentiating patients with achlorhydria from those secreting hydrochloric acid and is simple enough to be adapted to office use.

One hundred and four patients participated in this study. As a check, the patients first underwent a standard 2-hour gastric analysis of stomach contents. A subcutaneous injection of Histalog to stimulate secretion was administered at the end of the first hour. Following removal of the gastric tube, the patients voided and then were given 2 mg. of azure A ion-exchange compound orally with 200 to 400 cc. of water. Urine specimens were collected during and exactly at the end of the subsequent first and second hours. In every case in which azure A compound was excreted, the second-hour specimens were uniformly clear blue after 10 minutes of heating and were best suited for visual comparison with standard solutions of azure A compound.

By the tubeless analysis method, 82 of the 84 patients with free hydrochloric acid were identified correctly. In one of the failures, the patient secreted a red pigment in the urine which made determination impossible. In the other failure, the test was not completed, and the patient was not available for reexamination. The twenty patients with achlorhydria were also identified correctly by this method. The authors point out that the tubeless method is not suitable for the quantitative measurement of hydrochloric acid secretion, but it does provide a quick and easy method for qualitative determination.

SURGICAL EMERGENCIES IN THE NEWBORN

Surgical emergencies due to congenital defects that arise in the newborn period are discussed in the December, 1955, issue of *Postgraduate Medicine* by Colin C. Ferguson, M.D. Between 60 and 90 per cent of infants born with congenital defects can be saved providing the conditions are recognized early and the surgeon is given a chance to treat the child before the onset of severe dehydration, aspiration pneumonia, or other complications.

Esophageal atresia is congenital absence of the midportion of the esophagus. Although it may occur as an isolated entity, it more commonly is found with some sort of tracheoesophageal communication. Esophageal anastomosis is the treatment of choice.

Very many or very few symptoms may be found in cases of diaphragmatic hernia. Such defects may be retrosternal, para-esophageal, para-aortic, right-sided pleuroperitoneal or, most commonly, through the left side of the diaphragm. There is usually no hernial sac. Surgical interference is necessary early in the newborn period. Operative procedure consists of incising the abdomen, opening the peritoneum, drawing the herniated viscera down into the abdominal cavity, repairing the defect in the diaphragm, and closing the abdomen.

The author has included chalasia in his list of congenital defects because it is a nonsurgical condition which is sometimes confused with obstruction. Treatment is simple: The infant is kept in an upright position for several hours after feeding. The condition is probably due to a delay in esophageal development and will correct itself within 3 or 4 months.

Malrotation of the large bowel is a defect which occurs during a phase of intrauterine development in which the rotation process is interrupted and the cecum is left in the right upper quadrant of the abdomen instead of in the right lower quadrant. Distention of the cecum results in a tightening of bands across the duodenum and produces partial duodenal obstruction. Frequent vomiting and poor weight gain are common signs of this condition. Roentgenologic demonstration can be made with the use of barium. Ladd's procedure is the operation of choice.

Complete obstruction in the region of the duodenum may be the result of duodenal atresia or annular pancreas. Treatment for either consists of constructing a retrocolic duodenojejunostomy so that the food can go right down through the intestine.

Jejunal atresia may be encountered lower in the intestinal tract. Only slight abdominal distention is present because the proximal intestine is decompressed by vomiting. The blind-ending proximal jejunum is greatly dilated and thick-walled, while the distal bowel is spaghetti-like in appearance. A side-to-side jejunal anastomosis is the necessary surgical procedure.

An infant with ileal atresia may have pronounced abdominal distention with greatly dilated loops of bowel. Frequently the intestine has perforated in utero, and roentgen examination will reveal areas of calcification within the peritoneal cavity. Usually the perforation has sealed over by the time of birth. An exploratory operation reveals calcified plaques and numerous adhesions in the peritoneal cavity rather than meconium. A choice of operations is present in cases of ileal atresia. The surgeon can do a side-to-side isoperistaltic jejunal anastomosis or, because there is sufficient proximal bowel to maintain nutrition, he can perform a Mikulicz ileostomy.

Meconium ileus is a condition which produces intestinal obstruction as a result of pancreatic fibrosis or mucoviscidosis. Because of the lack of pancreatic enzymes, the meconium is putty-like in consistency and completely plugs the bowel. Surgery is required to relieve the obstruction. The usual procedure is to construct an ileostomy at the level of meconium plugging.

Later, the distal intestinal tract can be cleared of the sticky meconium by irrigation with solutions containing pancreatic enzymes. After the obstruction has been overcome, the ileostomy can be closed. The child must remain on a diet supplemented by pancreatic enzymes, however.

Imperforate anus is a fairly common abnormality. Frequently infants born with imperforate anus have fistulas which may extend into the bladder, urethra, or vagina, or out at the perineum. If the gap between the blind-ending rectum and the anal dimple is short, the imperforate anus can be repaired by an anoplasty from below. If, however, there is a wide gap, an abdominoperineal type of anoplasty is necessitated.

Hirschsprung's disease or aganglionic megacolon is occasionally seen in the newborn period. Children presenting symptoms early in infancy should have a transverse colostomy performed immediately to tide them over their difficulty. At 1 or 2 years of age a resection of the aganglionic rectal segment, as recommended by Dr. Ovar Swenson, is suggested.

A certain percentage of sacrococcygeal teratomas are malignant and should be excised surgically very early in life to prevent metastases. Approximately 90 per cent of these children can be followed for 5 years with a normal course if surgery is done early in infancy.

Omphalocele is one of the more obvious abnormalities occurring in the newborn and constitutes an immediate surgical emergency because the cellophane-like covering is subject to early necrosis and, consequently, will rupture. Surgical procedure consists of excising the omphalocele sac and pushing the intestine back into the abdomen. Sometimes the defect is so large that the viscera cannot be reduced sufficiently to effect a layer closure of the abdominal wall. In this case, skin should be closed over the intestine, producing a large ventral hernia which, nevertheless, will not rupture. It is hoped that as the child grows, the abdominal cavity will enlarge sufficiently to make possible a layer closure.

INDEFINITELY PROLONGED CHEMOTHERAPY FOR TUBERCULOSIS

Tuberculosis being a disease which requires years of treatment for complete healing and having a high incidence of relapses, Alfred S. Dooneief, M.D., and his coworkers suggest postponing the initiation of drug therapy until diagnosis is established beyond all doubt and stress the need for prolonging treatment until some positive indication demands that the drug be withdrawn. Maintaining that positive prediction of permanent cure is not yet possible, the authors describe their experience with indefinitely prolonged treatment of 172 patients with drugs, which effectively and reciprocally postponed the development of bacterial resistance, in the *Archives of Internal Medicine*, October, 1955.

In this series, patients 14 to 77 years of age were treated with drug combinations for 12 to 45 months. Of the group, 111 had moderately advanced (20 had far advanced) and 11 had active, predominantly extrapulmonary, tuberculosis. Fifty-three had been under treatment for 12 to 23 months; 96 for 24 to 35 months, and 23 for more than 3 years uninterruptedly. The drugs used were streptomycin-PAS, isoniazid-PAS, streptomycin-isoniazid or streptomycin-isoniazid-PAS. Modified bed rest was part of the regimen until all gross signs of active tuberculosis disappeared, after which activity was restored and gradual rehabilitation to work or school was permitted. In 18 per cent of the patients, pulmonary resections were performed. Drug therapy was continued in all cases after the patients had returned to their homes and had resumed normal physical activity.

Patients for whom streptomycin intramuscularly was prescribed were taught to inject the drug themselves. Clinical, roentgenologic, and bacteriologic follow-up was continued on an outpatient basis or by personal physicians. Only three patients (1.7 per cent) experienced relapses, and their cases are summarized.

In no instance was it necessary to discontinue drug therapy because of adverse reaction. In the approximately 2 per cent of patients who are hypersensitive to streptomycin or PAS and in those who experience severe gastrointestinal symptoms after taking PAS, another drug is substituted. One gram of streptomycin sulfate two or three times a week usually has only slightly adverse neurologic effect except in the aged, who experience vertigo, and in such cases dihydrostreptomycin is substituted for the sulfate, and regular audiometric tests to check on possible damage to the cochlear division of the eighth nerve are instituted. Few side-effects are noted with the use of streptomycin and PAS, and 3 to 5 mg. of isoniazid per kilogram of body weight per day reportedly has little toxic effect over short intervals, and the authors witnessed no instances of increased toxicity even when this dosage was continued for as long as 3 years.

Some patients experience a feeling of inebriation or "hangover" (streptomycin intoxication) on the day they receive streptomycin sulfate, but careful tests indicated that the psychic component and suggestibility played an important part in this phenomenon, whereas the physiologic component appeared not to be disabling.

The chief purpose of prolonged therapy is to prevent relapse, although why prolonged treatment should prevent it is not clear. It appears, however, to reduce bacterial multiplication in caseous lesions and to prevent the thriving of organisms at new sites. When new lesions do occur, they apparently do not evolve to proportions visible by roentgenologic study. Relapse rates before chemotherapy ranged from 24 to more than 50 per cent in patients followed for 20 years after the tuberculosis had been pronounced arrested.

CIVIL DEFENSE

Civil defense and the role of the physician in situations of mass disaster are discussed in the October, 1955, issue of *California Medicine* which is devoted entirely to this subject.

Of the nine articles included in this issue, eight are of general interest to all physicians. The ninth deals with civil defense planning in California.

In "The Medical Aspects of Atomic and Thermonuclear Warfare," Justin J. Stein, M.D., and Stafford L. Warren, M.D., discuss the phenomenology of the A-bomb, radiologic defense, and diagnosis and management of radiation injuries. "Proper Handling of Mass Casualties During a Major Disaster" is outlined by James F. Regan, M.D. He deals specifically with shock, wounds in general, head injuries, eye injuries, chest injuries, abdominal injuries, fractures, crush injuries, and burns. A more detailed discussion of burn therapy is given by Melvin A. Casberg, M.D., who writes on "Emergency Treatment of Burns in Mass Casualties."

An article of particular interest to any physician who may have to deal with mass hysteria, whether caused by an atomic bombing or by a civilian explosion or fire, is the article by Douglas McGlashan Kelley, M.D., entitled "Dealing with Hysteria in Catastrophe." In this article the author outlines the physiologic and psychologic aspects of hysteria and suggests various methods for handling mass hysteria. He also points out ways in which the physician, as a key person in any disaster situation, can alleviate or even prevent mass panic.

The problem of the "Procurement and Use of Blood, Blood Derivatives and Plasma Expanders in a Major Disaster" is discussed by John R. Upton, M.D. Public health measures, such as communicable disease control, water, milk and food supply, vector control, emergency feeding, radiologic monitoring, and the establishment of public health laboratories and nursing services, are explained by George M. Uhl, M.D., in "Public Health Measures to Be Taken in a Major Disaster." Finally, "Medical Aspects from the Federal Standpoint" are outlined by John M. Whitney, M.D.

The opening article, "The Plans for Medical Organization and Action in California," by Justin J. Stein, M.D., W. Dalton Davis, M.D., and Frank L. Cole, M.D., may serve as a guide for other state organizations which are not so far along in their planning.

Book Reviews

DIFFERENTIAL DIAGNOSIS. The Interpretation of Clinical Evidence. By A. McGehee Harvey, M.D., Professor of Medicine and Head of the Department of Internal Medicine, The Johns Hopkins University School of Medicine; Physician-in-Chief, The Johns Hopkins Hospital; and James Bordley III, M.D., Director, Mary Imogene Bassett Hospital, Cooperstown, N. Y.; Clinical Professor of Medicine, Columbia University, New York; Clinical Professor of Medicine, Albany Medical College. Cloth. Pp. 665. Price $11.00. W. B. Saunders Company, West Washington Square, Philadelphia 5, 1955.

The term "diagnosis" has many shades of meaning. The authors of this book recognize this and stress that for their purposes "diagnosis" when not preceded by a qualifying adjective means " . . . the identification of a disease by the investigation of its manifestations," and "differential diagnosis" means " . . . the art of distinguishing one disease from another." To accomplish their purpose of enlarging the reader's knowledge of the field, they have employed the case method of teaching the subject. Some knowledge of diagnosis is presupposed, and no attempt is made to cover the field in its entirety. The scope of the text includes conditions of importance which are characterized by protean manifestations and in which the separation of one from another is of some practical importance. They do not indulge in the exercise of distinguishing one uniformly intractable condition from another about which nothing can be done.

Each major problem is discussed in a separate chapter, in which there is a general consideration of the diagnostic features of the disease, followed by illustrative case histories drawn from those presented at the clinicopathological conferences at Johns Hopkins Hospital. The discussion is adequate, and the case histories are well developed and well chosen to illustrate the problem with which they are concerned. Following twelve chapters of this type, there is a chapter covering special diagnostic problems, with the inclusion of certain rare diseases, which follows the same general pattern of the preceding chapters. Following this there is a group of case histories for study in which the diagnosis and discussion which led to it are withheld until later in the text. The book also includes a special index of symptoms, signs, and laboratory findings as well as the usual general index. The book is well written, adequately documented, and properly indexed. While it is not a text from which the art of differential diagnosis will be revealed to the neophyte, it holds considerable value for the physician who seeks to expand his knowledge of the subject.

TEXTBOOK OF THE RHEUMATIC DISEASES. Edited by W. S. C. Copeman, O.B.E., M.D., F.R.C.P., Senior Physician, Arthur Stanley Institute for Rheumatic Diseases, Middlesex Hospital; Physician in charge of Department of Rheumatic Diseases, West London Hospital; Chairman, Empire Rheumatism Council; and Late President, European League against Rheumatism. Ed. 2. Cloth. Pp. 754, with illustrations. Price $11.00. The Williams & Wilkins Company, Mount Royal & Guilford Aves., Baltimore 2, 1955.

The authors of this text have been confronted with the usual difficulty of those who write or work in this field: causes are largely unknown and treatment is usually both empirical and of limited value. In addition, the contributors to the book are British practitioners, with the result that their work reflects British medical practice, which is not always in accord with what is done in the United States. As an example, colonic irrigation is favorably described, while here it is dismissed as a matter of little moment. Also, the administration of cortisone differs somewhat from the regimen usually followed in this country. Nearly every conceivable treatment of any repute is described, with the result that there is a summary of methods with little detailed description of any one.

From a technical point of view, the book is generally well written and copiously illustrated. Page 622 is numbered 922.

Employment of manipulation is discussed under a subheading in a chapter entitled "The Principles of Orthopaedic Treatment of Arthritis." The authors of this particular chapter, two distinguished British orthopedic surgeons, state that the credit occasionally given to osteopaths for their role in manipulation is a "fantastic misrepresentation." They state that "osteopathy is a recent quackery, born in the mind of an American politician a little over sixty years ago, whereas manipulation has been part of surgical technique and the technique of bone-setters for two thousand years." The misinformation and the apparent lack of any knowledge of the origin, growth and development, and present status of osteopathic medicine can be quite understandable as a provincialism of able British physicians. That the publishers should permit so careless a disregard of facts is far less understandable.

THE DOCTOR WRITES: An anthology of the Unusual in Current Medical Literature. Edited by S. O. Waife, M.D., F.A.C.P. Cloth. Pp. 175. Price $3.75. Grune & Stratton, Inc., 381 Fourth Avenue, New York 16, 1954.

This little anthology of outstanding medical articles of 1953 of a type that defies "scientific" classification constitutes noteworthy evidence that much medical literature of value gets buried every year. This collection came out of one man's reading—a scintilla of the amount in print—on the basis of its personal appeal to him, because the subject of an article was interesting, or the author had an excellent literary style.

Obviously the book's editor is a wide reader, and possesses a sophisticated taste, hence the volume will appeal to those of equal bent. It will serve a more worthy purpose, however, if the volume gets into the hands of the casual reader, to persuade him of his loss in not cultivating wider reading tastes. That happenstance indeed would fulfill the collector's wish for the book—that it affords emotional pleasure, intellectual profit, and spiritual peace to the reader. The inveterate reader is apt to possess those riches.

Of the seventeen reports which make up the book—all interesting and several of high order—the most intriguing is "A Cardiology Anomaly: Albert Abrams (1863-1924). This paper deals primarily with a now unknown monograph of Abrams entitled "Diseases of the Heart," published in 1900, an acceptable piece of medical literature of its day. The book has interest today as *curiosa* because it was written when Abrams was only 36, and its author seemed destined to make a rich contribution to medicine and become a physician of renown. Instead he did become rich, and one of the greatest medical charlatans of all time.

A reading of all the papers included should convince any physician that his life might be intellectually adventure-filled if he would only cultivate the reading habit as has the editor of this anthology. Even a half hour a day, every day, devoted to books would lead him far in that direction!

HUMAN PHYSIOLOGY. By F. R. Winton, M.D., D.Sc., Professor of Pharmacology, University College London; and L. E. Bayliss, Ph.D., Honorary Research Associate in Physiology, University College London. Ed. 4. Cloth. Pp. 616, with illustrations. Price $8.00. Little, Brown & Company, 34 Beacon Street, Boston 6, 1955.

The authors of this text have made no effort whatever to prepare an encyclopedia of human physiology; rather, they have made an effort to confine their discussion to topics that they feel are the most important for the student to know and understand. They have been largely successful. It is also their aim, again largely successful, to present the material so that it tends to encourage "the intellectual attitude of an alert explorer" rather than to make the student "the passive recipient

of orthodox knowledge." It also is designed to make the student aware of the type of evidence that is acceptable as a criterion for drawing valid conclusions in the field of physiology.

In general, this appears to be a good example of one of the "smaller" textbooks in physiology. It should be most useful for general reading and study.

INTESTINAL OBSTRUCTIONS. Physiological, Pathological and Clinical Considerations with Emphasis on Therapy, Including Description of Operative Procedures. By Owen H. Wangensteen, B.A., M.D., Ph.D., Professor of Surgery, University of Minnesota, Minneapolis, Minnesota. Ed. 3. Cloth. Pp. 838, with illustrations. Price $15.50. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1955.

All types of intestinal obstructions are discussed, both from a theoretical and practical point of view. Diagnosis, general considerations of the patient's condition, criteria in the selection of therapy, evaluation of alternative surgical procedures, descriptions of the surgical procedures, and general patient care are all discussed. The conservative care of cases which do not require immediate surgical intervention is also well presented.

Many new procedures are discussed in this edition, and new light is shed on many of the older ones. As might be expected, fluid and electrolyte balance receives considerable attention, most of it of a practical nature.

The first edition of this text was published under rather unusual circumstances. Despite the fact that it won the Samuel D. Gross Prize Award of the Philadelphia Academy of Surgery in 1935, it was rejected by three successive publishers. It was finally accepted by the present publisher, sight unseen, and was immediately accorded a warm reception by the medical profession when it was published. The second edition appeared in 1942. The present edition has been completely revised and is characterized by its author as "a more mature book than its predecessors."

The general format of the book is excellent. Indexing is adequate, illustrations are well chosen, and the writing is clear and readable. A valuable book.

PAIN. Its Mechanisms and Neurosurgical Control. By James C. White, M.D., F.A.C.S., Chief of Neurosurgical Service, Massachusetts General Hospital; Associate Professor of Surgery, Harvard Medical School; and William H. Sweet, M.D., F.A.C.S., Associate Visiting Neurosurgeon, Massachusetts General Hospital; Associate Clinical Professor of Surgery, Harvard Medical School; with assistance in the psychiatric sections of Chapters IV and X from Stanley Cobb, M.D., Former Chief of Psychiatric Service, Massachusetts General Hospital; Bullard Professor of Neuropathology, Emeritus, Harvard Medical School; and Frances J. Bonner, M.D., Assistant in Psychiatry, Massachusetts General Hospital and Harvard Medical School, Boston, Massachusetts. Cloth. Pp. 736, with illustrations. Price $17.50. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1955.

Considerations of pain as a warning signal are outside the intent of this book, for its scope is largely confined to the neurosurgical control of useless, severe, and intractable pain.

The authors are not recommending neurosurgical measures as the panacea for the control of all pain. Rather, they are concerned with those problems in which pain is severe enough to demand relief and does not yield to more conservative therapy. One of the valuable aspects of this book is the fact that failures are frankly admitted and complications and untoward results are openly acknowledged, with evaluations of the reasons for these difficulties where the reasons are known. The methods advocated are those that the authors have found to be effective, but reference is made to alternative methods where the reader may have reason to want to consider them.

The first portion of the text is given over to a discussion of the basis for the types of intervention described later. This includes the anatomy of the nervous system as it pertains to pain perception and conduction, and the mechanics by which these functions are carried out. Psychiatric considerations are also discussed, including such topics as pain threshold, malingering, the neurotic component of pain, the effects of attention and distraction, and the patient's reaction to pain, doctors, and therapy.

The second portion of the book, which occupies most of it, is taken up by descriptions of technics for procedures intended to ameliorate various types of pain in more or less specific locations. The technics described range from relatively simple blocks to formidable operations on the spinal cord and brain. Not only are technics described, but undesirable features are frankly pointed out for the reader's benefit, along with considerations of the procedure's beneficial effects and advantages. This section of the text is followed by a shorter one devoted to highly specific problems and their treatment.

The book is well written, most of the text being of commendable clarity. Numerous useful illustrations and numerous tables are employed. The book should be useful not only to the neurosurgeon who actually performs the procedures described, but also to the practitioner who will have occasion to evaluate the patient with a view to determining whether or not surgical intervention should be considered.

A PRIMER OF ELECTROCARDIOGRAPHY. By George E. Burch, M.D., F.A.C.P., Henderson Professor of Medicine, Tulane University School of Medicine; Physician-in-Chief, Tulane Unit, Charity Hospital; Consultant in Cardiovascular Diseases, Ochsner Clinic, Ochsner Foundation Hospital, Veterans Administration Hospital; Visiting Physician, Touro Infirmary; Consultant in Medicine, Hotel Dieu, Illinois Central Hospital, New Orleans; and Travis Winsor, M.D., F.A.C.P., Assistant Clinical Professor of Medicine, University of Southern California Medical School; Director of Nash Cardiovascular Foundation, Hospital of the Good Samaritan; Junior Attending Physician, Los Angeles County Hospital; Junior Attending Physician and Diplomate, Childrens Hospital, Cardiac Department, Los Angeles. Ed. 3. Cloth. Pp. 286, with illustrations. Price $5.00. Lea & Febiger, Washington Square, Philadelphia 6, 1955..

The first edition of this book appeared in 1945. Since that time it has gained a wide acceptance, and there is no reason to doubt that the third edition will receive the same acceptance. It is, as the title indicates, a book intended for the beginner in electrocardiography. No previous knowledge of interpretation of electrocardiograms is presupposed, and a solid base of theoretical and descriptive material precedes the practical discussions.

The reader will gain little from a casual reading of the book, but intensive application should be rewarding. It seems to be an inherent characteristic of this subject that concentrated effort is required to achieve any significant mastery of it. Certainly this book is intended for careful study rather than rapid reading.

The indexing is adequate, the illustrations are revealing, and the general approach appears to be a most useful one for the audience for which the book is intended.

PATHOLOGY FOR THE SURGEON. By William Boyd, M.D. Edin., Dipl. Psychiat. Edin., F.R.C.S. Canada, F.R.C.P. Lond., M.R.C.P. Edin., F.R.S. Canada, LL.D. Sask., D.Sc. Man., M.D. Oslo. Lecturer on the Humanities in Medicine, The University of Toronto; Visiting Professor of Pathology, The University of Alabama; Formerly Professor of Pathology, The University of Manitoba, The University of Toronto and The University of British Columbia. Ed. 7. Cloth. Pp. 737, with illustrations. Price $12.00. W. B. Saunders Company, West Washington Square, Philadelphia 5, 1955.

For 30 years this work appeared under the title, "Surgical Pathology." During that time it was revised six times. This is the seventh edition, and represents a rewriting rather than a revision, because the author felt that the earlier approach had become dated.

The material in this edition has been brought thoroughly up to date, with emphasis on the clinical aspects of the subject and with discussion of the mechanisms by which pathologic entities come into being. The change in title was accounted for

by the author's feeling that the surgeon is concerned with many conditions that may never actually come to surgery. The book has been written primarily for the graduate, so that the emphasis has been changed somewhat from that which would be most suitable for a book intended for the undergraduate.

As might be expected, thorough descriptions of the morbid anatomy and histology of the conditions discussed are given. However, Dr. Boyd has not limited himself to this, but has also given excellent treatment to the other aspects of the conditions: the physiology, biochemistry, et cetera that are involved. Considerable attention has been paid to problems of fluid and electrolyte balance.

The format of the book is good. The illustrations are numerous and well executed. The writing is clear, even, and readable. Indexing is adequate, and the bibliographies include the most recent pertinent materials available. In all, an excellent book.

THE MANAGEMENT OF OBSTETRIC DIFFICULTIES. By Paul Titus; revised by J. Robert Willson, M.D., M.S., Professor of Obstetrics and Gynecology, Temple University School of Medicine; Head of the Department of Obstetrics and Gynecology, Temple University Hospital; Consultant in Obstetrics and Gynecology and Chief of the First Service, the Philadelphia General Hospital, Northern Division. Ed. 5. Cloth. Pp. 737, with illustrations. Price $12.50. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1955.

With today's constant improvement and refinement in technics in all fields of medicine, frequent revision of most books is a must if they are to remain useful. This represents the fifth revision of one of the standard works in the obstetrical field. It is also an almost complete rewriting of the text with a change in authorship, but it is only fair to note that the original intent of the book is well preserved.

Normal conditions in the field of obstetrics have a place in this book only as preparatory material for the discussions the book is designed to present. As might be expected from the title, the bulk of the text is given over to considerations of abnormal conditions and the management they require. The author gives warning that in the interests of practical management, he is occasionally somewhat arbitrary in recommending one specific approach to the management of a given problem. He does not claim that what he recommends is the only possible procedure or, in some cases, even necessarily the best. His guiding rule in this matter is that his recommendations have " . . . been proved by actual practice to be safe, effective, readily applicable and suitable for use in most hospitals in which reasonably well-organized obstetric services are maintained." Procedures that he deems to be outmoded or unproved are deliberately omitted, as are many controversial procedures.

The fields covered in this volume include infertility, the diagnosis and duration of pregnancy, prenatal care and complications of pregnancy, normal labor and complications in labor, complications of the puerperium, and care of the newborn infant. Consideration is also given to obstetrical anesthesia and analgesia. Indexing is adequate, and the text is well written and organized with sufficient illustrations for clarity. In all, it should prove most useful as a reference work.

CLINICAL DISORDERS OF HYDRATION AND ACID-BASE EQUILIBRIUM. By Louis G. Welt, M.D., Professor of Medicine, Department of Medicine, University of North Carolina. Cloth. Pp. 262, with illustrations. Price $6.00. Little, Brown & Company, Boston 6, 1955.

An intelligent appreciation of salt and water balance disorders has become of increasing practical importance as better treatment has become available. This book deals with the recognition and treatment of such disorders, and does it well. Much of the book is devoted to considerations of the mechanisms by which hydration and acid-base equilibrium are maintained, with adequate explanations of the functions of these mechanisms, so that the reader is enabled to handle them in a more intelligent manner than that made possible by routinized rule of thumb methods.

The author recognizes that each individual patient presents unique problems and that neither the consideration of what is normal or abnormal balance nor the correction of imbalances can properly be based on strictly literal interpretation of a table of normal values. In the opinion of this reviewer, this recognition is one of the most valuable aspects of this book.

SEXUAL PRECOCITY. By Hugh Jolly, M.A., M.D. (Camb.), M.R.C.P., Consultant Pediatrician, Plymouth Clinical Area; Late Senior Medical Registrar, Hospital for Sick Children, Great Ormond Street, London, England. Cloth. Pp. 276, with illustrations. Price $6.75. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1955.

Many factual data on the subject of sexual precocity which are of interest to the endocrinologist and students of the subject are presented in this monograph. It is an intensive study of the disorder in sixty-nine patients in England, and it gives an idea of the relative frequency of the different types of sexual precocity. Consideration is given to differentiation of the various types of the disorder and to the psychologic aspects.

In the first part of the monograph the entire subject is critically reviewed, and the author analyzes important papers in relation to his experience. The second part is devoted to case histories of the sixty-nine patients.

PHYSIOLOGY AND ANATOMY with practical considerations. By Esther M. Greisheimer, B.S. in Education, M.A., Ph.D., M.D., Professor of Physiology, Temple University School of Medicine, Philadelphia; Formerly Professor of Physiology, Woman's Medical College of Pennsylvania, Philadelphia; Formerly Associate Professor of Physiology, The University of Minnesota, Minneapolis; with the assistance of Ann A. Miraldo, R.N., B.S., Science Instructor, Temple University School of Nursing. Ed. 7. Cloth. Pp. 868, with illustrations. Price $5.00. J. B. Lippincott Company, East Washington Square, Philadelphia 5, 1955.

This is the seventh edition of a text on this subject designed for use in nurses' training. As a general rule, the author describes the anatomy first, with discussion of physiology immediately following, but in some cases she has thought it wise to combine both into one discussion. A largely successful attempt is made to connect the academic material with its practical application. The writing is clear, and numerous good illustrations are employed. The book is well indexed.

AMEBIASIS. By Ernest Carroll Faust, A.B., M.A., Ph.D., The William Vincent Professor of Tropical Diseases and Hygiene, Head of the Division of Parasitology, Department of Tropical Medicine and Public Health, Tulane University of Louisiana, New Orleans, Louisiana. Cloth. Pp. 154, with illustrations. Price $4.75. Charles C Thomas, Publisher, 301-327 East Lawrence Ave., Springfield, Ill., 1954.

This is another specialized monograph dealing with a subject that is of considerable importance but frequently neglected in practice. Inasmuch as statistics indicate that at least 10 per cent of the people in this country are afflicted with amebiasis and the disease is known to be protean in its manifestations, it would appear that the subject deserves much more attention than it usually gets. This book makes a valuable effort to correct the situation.

The problem of amebiasis is discussed from many points of view, including etiology, epidemiology, diagnosis, treatment, and advocated measures for community control of its spread.

The material is presented in a practical manner which should enable the physician to make use of it with a minimum of difficulty. The book should be of widespread interest to practicing physicians.

Advisory Board for Osteopathic Specialists and Boards of Certification

ADVISORY BOARD FOR OSTEOPATHIC SPECIALISTS

Thomas J. Meyers, D.O., Chairman
Robert A. Steen, D.O., Secretary

Several specialty boards in osteopathic medicine were in the process of formation prior to 1939 and the demand for others was recognized. Osteopathic specialists and the osteopathic profession felt the need of a single authoritative agency to define graduate education, establish minimum standards that would be basic to such education, furnish information on procedure to the specialty groups, coordinate their efforts, and protect the public by giving validity to certification. To meet these needs, the Advisory Board for Osteopathic Specialists was organized in 1939 by authorization of the Board of Trustees of the American Osteopathic Association. The Advisory Board rendered immediate assistance to existing specialty groups in their efforts to initiate and maintain minimum standards of graduate education against the time when individuals in various specialties would be prepared for certification. It helped in the establishment of additional boards of certification as the growth of specialties within osteopathic medicine demanded.

Certifying boards need assistance in determining the standards of fitness and ability of each applicant for certification as a specialist, they require guidance in defining the scope of the several accepted specialties, and they need advice in establishing standards of education and training for these specialties. An authoritative agency of the Board of Trustees of the American Osteopathic Association is required to maintain a cooperative effort between the certifying boards and educational and training-hospital groups, in order that graduate educational facilities will be constantly available to students in the various specialty fields. By the creation of an advisory board it was possible to obviate duplication of effort, to promote uniformity in the methodology of certification, to prevent unofficial groups from assuming the right of certification, and to inform the profession at large of the significance of specialty certification and its relation to the general practitioner.

The Advisory Board is composed of the secretaries of the approved certifying boards and one other appointed representative from each of the boards, two representatives of the Board of Trustees of the American Osteopathic Association, and representatives from such other national groups as are interested in the education, examination, and certification of osteopathic specialists.

Member organizations comprising the Advisory Board of Osteopathic Specialists are eleven boards of specialty certification, the Board of Trustees of the American Osteopathic Association, the Bureau of Professional Education and Colleges, the Bureau of Hospitals, the American Association of Osteopathic Colleges, and the Central Office of the American Osteopathic Association. The voting membership totals 30.

MEMBERSHIP OF THE ADVISORY BOARD FOR OSTEOPATHIC SPECIALISTS, 1956

BOARD OF TRUSTEES OF THE AMERICAN OSTEOPATHIC ASSOCIATION
Gus S. Wetzel — Ralph E. Copeland

BUREAU OF PROFESSIONAL EDUCATION AND COLLEGES
Roy J. Harvey — Charles C. Dieudonne

BUREAU OF HOSPITALS
John P. Schwartz — Vincent P. Carroll

AMERICAN ASSOCIATION OF OSTEOPATHIC COLLEGES
K. J. Davis — Wallace M. Pearson

CENTRAL OFFICE—AMERICAN OSTEOPATHIC ASSOCIATION
Robert A. Steen

AMERICAN OSTEOPATHIC BOARD OF DERMATOLOGY AND SYPHILOLOGY
Ronald W. MacCorkell — James D. Stover

AMERICAN OSTEOPATHIC BOARD OF INTERNAL MEDICINE
Basil Harris — Glennard E. Lahrson
(Alternate) Neil R. Kitchen

AMERICAN OSTEOPATHIC BOARD OF NEUROLOGY AND PSYCHIATRY
K. Grosvenor Bailey — Cecil Harris

AMERICAN OSTEOPATHIC BOARD OF OBSTETRICS AND GYNECOLOGY
Dorothy J. Marsh — Jacquelin Bryson
(Alternates) Frank E. Gruber, Kenneth Scott

AMERICAN OSTEOPATHIC BOARD OF OPHTHALMOLOGY AND OTORHINOLARYNGOLOGY
Ralph S. Licklider — J. Ernest Leuzinger
(Alternates) C. M. Mayberry, C. L. Attebery

AMERICAN OSTEOPATHIC BOARD OF PATHOLOGY
Robert P. Morhardt — Norman W. Arends

AMERICAN OSTEOPATHIC BOARD OF PEDIATRICS
William S. Spaeth — Evangeline N. Percival
(Alternates) H. M. Dubin, Mary E. Golden

AMERICAN OSTEOPATHIC BOARD OF PHYSICAL MEDICINE AND REHABILITATION
Robert C. Ruenitz — William W. W. Pritchard

AMERICAN OSTEOPATHIC BOARD OF PROCTOLOGY
Carlton M. Noll — Carl S. Stillman, Jr.

AMERICAN OSTEOPATHIC BOARD OF RADIOLOGY
W. L. Tanenbaum — D. W. Hendrickson
(Alternate) Paul T. Lloyd

AMERICAN OSTEOPATHIC BOARD OF SURGERY
James M. Eaton — Arthur M. Flack, Jr.
(Alternate) Lucius B. Faires

COMMITTEES, 1956

Executive Committee:
Thomas J. Meyers, Chairman
Carlton M. Noll, Vice Chairman
Robert A. Steen, Secretary
Norman W. Arends
K. J. Davis

Review Committee (three members):
Appointed annually not later than 30 days before the time of annual meeting.

Appeal Committee (five members):
Appointed when deemed necessary by the Chairman of the Advisory Board with the approval of the Executive Committee.

Committee on Basic Documents:
K. J. Davis, Chairman
Glennard E. Lahrson
Robert A. Steen

REVISED RULES OF ORGANIZATION AND PROCEDURE

ARTICLE I

Sec. a. The name of this body shall be the Advisory Board for Osteopathic Specialists.

Sec. b. This Advisory Board is constituted and functions under the auspices of the Board of Trustees of the American Osteopathic Association to which it serves as an advisory body and from which it receives authority to engage in those activities necessary to fulfill its purposes. Actions of this Board to have effect must be approved by the Board of Trustees of the American Osteopathic Association.

ARTICLE II—PURPOSES AND DUTIES

The purposes and duties of this Board shall be the following:

Sec. a. To assist in the establishment of certifying boards which shall determine the fitness and ability of each applicant for certification as a specialist in a distinct and recognized specialty.

(1) To be accepted as a certifiable field of specialization such specialty must be accurately definable, must be represented by a reasonable number of individuals who confine themselves or give the preponderance of their time to practice within the defined field; the technics practiced within the field shall be adequate to care for the majority of cases within the field defined; it shall be a field in which knowledge of the entire

range of possibilities is a basic qualification and in which only the unusual case calls for special technics not included within the definition and where the practitioner within the field is required to be competent to decide upon the need for special technics.

(2) The definition which is included for the specialty shall be stated so as to delineate accurately the scope of practice properly embraced by the specialty.

Sec. b. To advise the specialty certifying boards with reference to defining and determining the scope of the several accepted specialties.

Sec. c. To advise the specialty certifying boards with reference to establishing appropriate standards of education and training for the several specialties and coordinating the requirements for certification by the certifying boards.

Sec. d. To advise the certifying boards in reference to the development of an appropriate modus operandi for determining fitness of applicants for certification.

Sec. e. To receive from the certifying boards proposals relating to their organization and activities and transmit these with appropriate recommendations to the Board of Trustees of the American Osteopathic Association.

Sec. f. To provide for the certification of applicants in distinct and recognized specialties in which there is no organized specialty society in the profession and no certifying board.

Sec. g. To review the proposals for certification received from the certifying boards and make recommendations concerning each proposal to the Board of Trustees of the American Osteopathic Association for its action.

Sec. h. To maintain contact with the activities of the certifying boards in order to ascertain their conformity to the standards and procedures adopted and to advise them when indicated regarding corrections in their procedures. If necessary, the Advisory Board shall make appropriate recommendations to the Board of Trustees of the American Osteopathic Association when any certifying board persists in failing to conduct its affairs in an acceptable manner.

Sec. i. To cooperate with the Executive Secretary of the American Osteopathic Association in maintaining an accurate listing of certified specialists in good standing.

Sec. j. To assist in educating the profession at large concerning the significance of specialty certification and its relation to the general practitioner.

Sec. k. To respond in an advisory capacity to any group within the profession in matters pertaining to the recognition or declaration of specialization.

Sec. l. To cooperate with the Bureau of Professional Education and Colleges, the Bureau of Hospitals, and the American Osteopathic Association in creating and standardizing specialty training programs and in establishing the principle of certification in the personnel of the organizations coming under its jurisdiction.

Sec. m. To keep a record of all meetings, transactions, and actions of the Advisory Board and maintain in an appropriate form a cumulative compilation of recommendations of this Board to the Board of Trustees of the American Osteopathic Association.

The original stenographic notes of the proceedings of the Advisory Board shall be filed as the legal record of the minutes of the Advisory Board. The edited minutes shall be considered legal after approval by the Advisory Board except in instances of question as to original intent and purpose, when the original record shall become a part of the final document of record.

Sec. n. To establish and maintain a file of the constitutions and bylaws of all approved certifying boards together with their amendments, cumulative lists of their memberships, cumulative lists of those certified by each certifying board, and record the standing of each certificate holder.

ARTICLE III—MEMBERSHIP

Sec. a. The membership of the Advisory Board for Osteopathic Specialists shall consist of those designated ex-officio members together with the secretary-treasurers of the several approved certifying boards and one other appointed representative from each of the certifying boards and representatives from each of the following groups as indicated below, appointed by its chairman or president:

(1) Board of Trustees of the American Osteopathic Association—two representatives.
(2) Bureau of Professional Education and Colleges—two representatives.
(3) Bureau of Hospitals—two representatives.
(4) American Association of Osteopathic Colleges—two representatives.
(5) Central Office—American Osteopathic Association—one representative. The Executive Secretary of the American Osteopathic Association shall appoint one osteopathic physician from Central Office to serve as a member of the Advisory Board.

Sec. b. Member organizations shall make their appointments within 60 days following each annual meeting of the American Osteopathic Association and the appointments shall be communicated promptly to the Executive Secretary of the American Osteopathic Association and to the Secretary of the Advisory Board.

Sec. c. Each member organization is entitled to two votes, but in no case may a member organization be entitled to vote without a duly authorized representative being present. Both votes may be cast by one representative in the absence of the other. The representative of the Central Office shall have no vote.

Sec. d. Alternates may be accepted as members if they are designated by the appropriate member organization officer and their names are in the hands of the Executive Secretary of the American Osteopathic Association and the Secretary of the Advisory Board for Osteopathic Specialists before the time of the annual meeting of the Advisory Board.

Sec. e. When one individual is named by two different member organizations as a representative, the appointing officer whose appointment was last received shall be informed of the previous appointment of the individual by another member organization so that his appointment may be changed if desired.

Sec. f. When an ex officio member of the Advisory Board is appointed as a representative of a member organization, he shall vote in the capacity as such a representative. If he is an Advisory Board member ex officio only, he may vote as an individual.

Sec. g. Any organization which holds membership on the Advisory Board and which does not have its representatives in attendance for two consecutive years shall have its membership on the Advisory Board revoked.

ARTICLE IV—OFFICERS

Sec. a. The officers of this Board shall be Chairman, Vice-Chairman, and Secretary.

Sec. b. The Chairman shall be elected at each alternate annual meeting for a term of 2 years from those who are members at the time of election.

In the event of his not being a member of the Advisory Board under the provisions of Article III, Sec. a, during the period for which he is elected, he shall continue a member for the term of his office.

He shall appoint all committees, excepting as otherwise provided, serve as an ex-officio member of all standing committees, make the prescribed reports, preside at all meetings of the Advisory Board, act as Chairman of the Executive Committee, and perform such other duties as customarily reside in the office.

He shall make an annual and a midyear report of the Advisory Board's activities to the Board of Trustees of the American Osteopathic Association.

Sec. c. The Vice-Chairman shall be elected at each alternate annual meeting for a term of 2 years from those who are members at the time of the election.

He shall be a member of the Advisory Board at the time of his election and shall be a member ex officio during the term for which he is elected.

He shall perform the duties customarily resident in this office.

Sec. d. The Secretary shall be elected every third year for a term of 3 years from those who are members at the time of the election.

He shall be a member of the Advisory Board ex officio during the term for which he is elected.

He shall keep a record of all meetings, transactions, and actions of the Advisory Board and assist the Chairman in such other duties as are appropriate to this office.

Sec. e. In the event of a vacancy in the office of the Chairman and Vice-Chairman, the senior member of the two members at large elected to the Executive Committee, shall act as Chairman until the next regular meeting.

ARTICLE V—COMMITTEES

Sec. a. The Executive Committee shall be composed of the Chairman, Vice-Chairman, Secretary, and two members of the Advisory Board.

One such member from the Advisory Board shall be elected each year for a term of 2 years.

Elected members of the Executive Committee shall be members ex officio of the Advisory Board through the terms for which they are elected.

This committee shall carry out the policy and activity initiated or decided by the Advisory Board. The Executive Committee shall meet on call of the Chairman.

The Executive Committee shall act for the Advisory Board between meetings of the Advisory Board. All actions of the Executive Committee shall be subject to approval of the Board of Trustees of the American Osteopathic Association.

Sec. b. A Review Committee composed of three members shall be appointed by the Chairman not later than 30 days before the time of the annual meeting, or special meeting, from among members who affirm their intent to be in attendance at the meeting. This committee shall review the data supporting the proposals for certification submitted by the certifying boards and make recommendations to the Advisory Board concerning the proper action on each candidate proposed.

Names of the candidates who fail to meet the requirements of the Review Committee shall not be presented to the Advisory Board.

Sec. c. A Nominating Committee composed of three members shall be appointed by the Chairman at the time of the annual meeting to name candidates for officers for the ensuing year and to report to the last session of the meeting, at which time election of officers shall take place. Nominations from the floor will be in order.

Sec. d. An Appeal Committee shall be selected and appointed by the Chairman of the Advisory Board, with the approval of the Executive Committee whenever it is deemed necessary by the Chairman of the Advisory Board to provide for adjudication of a charge filed with the Advisory Board of unfairness or improper conduct of the affairs of any certifying board by an applicant for certification.

The Appeal Committee shall be composed of five members, who shall elect their own chairman, one individual to be appointed from the Bureau of Professional Education and Colleges; one from the Bureau of Hospitals; one from the Board of Trustees of the American Osteopathic Association; and two from the membership of the Advisory Board for Osteopathic Specialists, no one of whom shall be a member of the certifying board which is the object of complaint.

The meeting, or meetings, of the committee shall be arranged by the Chairman of the Appeal Committee with the complainant and a representative appointed by the chairman of the certifying board involved. A stenotype record of the proceedings shall be made, and such notes shall be confidential.

After hearing and considering the presentation of the complaint and the certifying board's response giving reasons for the action against which the complaint is directed, and after making any necessary investigation, the Appeal Committee shall make a report to the Advisory Board for Osteopathic Specialists, indicating what the Committee considers to be the proper action to be followed by the parties concerned. If the controversy is not suitably adjudicated and the circumstances justify, the report of the Appeal Committee shall be presented to the Board of Trustees of the American Osteopathic Association for further action.

This committee shall be dissolved upon conclusion of the duties specified above.

Sec. e. A Committee on Basic Documents shall be appointed by the Chairman of the Advisory Board for Osteopathic Specialists at each annual meeting. For the purposes of this Committee, the basic documents shall be defined as the Constitution and Bylaws, Regulations and Requirements of the specialty certifying boards, and the Manual of Procedure for the Advisory Board for Osteopathic Specialists and Boards of Certification.

The duties of this committee shall be:

(1) To maintain a file of all basic documents of the Advisory Board and its member certifying boards.

(2) To prepare and submit to the Advisory Board amendments to the Manual of Procedure for the Advisory Board for Osteopathic Specialists and Boards of Certification.

(3) To review the basic documents of the specialty certifying boards and recommend proposed changes in these documents as may be necessary to establish conformity with the Manual of Procedure for the Advisory Board for Osteopathic Specialists and Boards of Certification, as approved by the Board of Trustees of the American Osteopathic Association.

ARTICLE VI—MEETINGS

Sec. a. A regular annual meeting shall be held at the time and place of the annual convention of the American Osteopathic Association. The meeting shall be scheduled at such time that recommendations from this Advisory Board may be transmitted to the Board of Trustees of the American Osteopathic Association before the conclusion of its final sessions. The time and place of the sessions of the Advisory Board's meeting shall be communicated to all members not less than 30 days before the date of convening.

Sec. b. A quorum at any session of any regular meeting shall consist of a majority of the designated membership of the Advisory Board, and at least one-third of the member organizations shall be represented.

Sec. c. Robert's Rules of Order shall be followed except where they conflict with these rules of procedure.

Sec. d. The order of business shall be as follows:

(1) Call to order.
(2) Roll call.
(3) Secretary's report including:
  (a) Presentation of the report to the Board of Trustees of the American Osteopathic Association made at the preceding annual meeting.
  (b) Presentation of the Chairman's preliminary report to the Board of Trustees of the American Osteopathic Association, and the recommendations for the current session of the Advisory Board.
(4) Appointment of Nominating Committee.
(5) Reports and recommendations of certifying boards.
(6) Reports of standing committees.
(7) Reports of special committees.
(8) Unfinished business.
(9) Receipt of communications.
(10) Report of Review Committee.
(11) New business and assignments to appropriate committees.
(12) Report of Nominating Committee and election of officers.
(13) Appointment of committees for ensuing year.
(14) Adjournment.

ARTICLE VII—AMENDMENTS

Sec. a. Amendments to these Rules of Organization and Procedure may be adopted for submission to the Board of Trustees of the American Osteopathic Association for approval by the vote of a majority of the members of the Advisory Board registered with the Secretary as present at the annual meeting, provided the proposed amendment has been submitted to each member present in writing or printed form not less than 12 hours preceding the time of the meeting at which the vote is to be taken.

Sec. b. A Manual of Procedure for the Advisory Board for Osteopathic Specialists and Boards of Certification shall be issued by Central Office within 90 days following adoption of this recommendation by the Board of Trustees. It shall contain the following:

(1) Rules of Organization and Procedure of the Advisory Board for Osteopathic Specialists as amended with the approval of the Advisory Board and the Board of Trustees.

(2) Rules of Procedure for specialty certifying boards as amended with the approval of the Advisory Board and Board of Trustees.

(3) Standard Constitution and Bylaws of Boards of Certification as approved by the Board of Trustees.

(4) Model form for Regulations and Requirements of Boards of Certification.

(5) Model form Outline for Annual Report of Secretaries of Certifying Boards to the Advisory Board.

Sec. c. The documents listed under Section b above shall be edited, rearranged, and revised, without changing the intent, to provide better phraseology and continuity. Repetitions shall be deleted.

Sec. d. Three hundred copies of the Manual shall be issued. They shall be distributed to the Executive Committee of the American Osteopathic Association, officers and members of boards of certification, and to other individuals who have a right to the Manual.

Sec. e. The Manual shall be revised every 2 years, and the revisions shall include recommendations of the Advisory Board which have been approved by the Board of Trustees since the preceding issue of the Manual pertaining to the conduct of the Advisory Board, boards of certification, and applicants for certification.

Sec. f. All recommendations which amend or in any way alter any of the documents reproduced in the Manual shall be presented as amendments with proper reference to the document, article, section, and paragraph.

BOARDS OF SPECIALTY CERTIFICATION

STANDARD CONSTITUTION AND BYLAWS

(Approved by the Board of Trustees of the American Osteopathic Association, July, 1948)

CONSTITUTION

of the

AMERICAN OSTEOPATHIC BOARD OF.....

ARTICLE I—NAME

The name of this organization shall be The American Osteopathic Board of .....

ARTICLE II—PURPOSE

Sec. 1. The purposes of this Board shall be:

(a) To define the qualifications to be required of osteopathic physicians for certification in the field (or fields) of ..... and of any other specialty field that may be assigned to this Board.

(b) To determine the qualifications of osteopathic physicians as specialists for certification in the field (or fields) of ..... and of any other specialty field that may be assigned to it.

(c) To conduct examinations in conformity with the Bylaws of this Board.

(d) To issue certificates, subject to the recommendation of the Advisory Board for Osteopathic Specialists and to the approval of the Board of Trustees of the American Osteopathic Association, to those physicians who are found qualified.

(e) To recommend revocation of certificates for cause.

(f) To use every means possible to maintain a high standard of practice in these specialties (this specialty) within the osteopathic profession.

The actions of the American Osteopathic Board of ..... are subject to the recommendation of the Advisory Board for Osteopathic Specialists and to the approval of the Board of Trustees of the American Osteopathic Association.

ARTICLE III—DEFINITION

Sec. 1. For the purpose of the operation of this Board the following division(s) of practice is (are) defined:

(a) The practice of ..... shall consist of and include .....

.....

(b) The practice of ..... etc., etc.

ARTICLE IV—ORGANIZATION

Sec. 1. Membership.

(a) The American Osteopathic Board of ..... shall consist of ..... members elected by .....

.....

Each elected member shall be a certified specialist in good standing in .....

(Each specialty group shall be represented in the membership of the Board .....) Insofar as possible there shall be a representative from each geographical time belt of the United States on this Board.

(b) Members shall be elected for a term of 3 years (except that at the first election of members to this Board three members shall be elected for 3 years, three shall be elected for 2 years, and three for 1 year. Thereafter, three members shall be elected annually for the full term of 3 years.) The terms of members should be so staggered that the new members elected in any year shall not constitute a majority of the Board. In case of death or resignation of any Board member, ... shall appoint a certified specialist from the corresponding field to fill the unexpired portion of the term.

(c) Members shall continue to serve until their successors are elected.

Sec. 2. Officers.

(a) The officers of this Board shall be:

(i) Chairman.

(ii) Vice-Chairman.

(iii) Secretary-Treasurer.

(b) These officers shall be elected by this Board for a term of 1 year at its annual meeting.

(c) Officers shall continue to hold office until their successors are elected.

Sec. 3. Committees.

(a) There shall be three standing committees of this Board and such other committees as may from time to time be authorized. The Chairman shall appoint all committees unless it is otherwise provided.

(b) The standing committees shall be:

(i) Credentials Committee.

(ii) Examination Committee.

(iii) Advisory Board Committee.

ARTICLE V—AMENDMENT

Sec. 1. Subject to the review and recommendation of the Advisory Board for Osteopathic Specialists and the approval of the Board of Trustees of the American Osteopathic Association this Constitution may be amended by a vote of two thirds of the total membership of this Board (or three fifths in a five-member Board) at any annual meeting following notification given at any previous annual meeting of such intention.

BYLAWS

of the

AMERICAN OSTEOPATHIC BOARD OF.....

ARTICLE I

DUTIES OF THE AMERICAN OSTEOPATHIC BOARD OF .....

Sec. 1. This Board shall serve as an advisory body to all applicants for certification in the specialty (specialties) of ..... and any other specialty which may be assigned to its jurisdiction.

Sec. 2. This Board shall determine, in accordance with the provisions of these Bylaws, the appropriate standards of education and the training held necessary for certification in the specialty (specialties) of ..... and of any other specialty which may be assigned to its jurisdiction, subject to the recommendations of the Advisory Board for Osteopathic Specialists and to the approval of the Board of Trustees of the American Osteopathic Association.

Sec. 3. This Board shall establish detailed rules for conducting all examinations in compliance with the provisions of these Bylaws and shall provide for the conduct of examinations

at least once a year in accordance with its Regulations and Requirements.

Sec. 4. This Board shall file with the Advisory Board for Osteopathic Specialists, at the time specified by the Advisory Board, its recommendations concerning each applicant for certification together with any pertinent information required by the Advisory Board for Osteopathic Specialists.

Sec. 5. This Board shall provide and issue certificates in all fields assigned to this Board's jurisdiction, as provided in Article V of these Bylaws.

Sec. 6. This Board shall provide permanent files for all records. It shall record and keep permanently on file all applications submitted to it and complete records of examination results and shall maintain a registry of certificate holders. All examination papers and case reports of applicants shall be kept on file for a period of 3 years.

Sec. 7. This Board shall levy and collect from applicants the funds necessary to finance the operation of this Board as provided in the Regulations and Requirements.

Sec. 8. This Board shall arrange for all meetings necessary to enable this Board to carry out its functions as provided in Article VI, Sections 1 and 2 of these Bylaws.

Sec. 9. This Board shall provide two members of this Board to function as representatives to the Advisory Board for Osteopathic Specialists. One of the two members shall be the Secretary-Treasurer. In case of inability of the regular representatives to attend the sessions of the Advisory Board for Osteopathic Specialists, the Chairman of this Board shall appoint alternates as provided in the Rules of Organization and Procedure of the Advisory Board for Osteopathic Specialists.

Sec. 10. This Board shall conduct its activities in relation to the officers of the American Osteopathic Association, the Advisory Board for Osteopathic Specialists, other certifying boards, and applicants for certification as provided in the Rules of Procedure for Specialty Certifying Boards compiled by the Advisory Board for Osteopathic Specialists and approved by the Board of Trustees of the American Osteopathic Association.

Sec. 11. This Board shall make, in conformity to its Constitution and Bylaws, all necessary regulations and requirements to govern its activities which are not provided by the Advisory Board for Osteopathic Specialists and the Board of Trustees of the American Osteopathic Association.

ARTICLE II—COMMITTEES

Sec. 1. Credentials Committee.

(a) There shall be a Credentials Committee of ..... members appointed by the Chairman of this Board, whose members shall represent different geographical districts so far as possible.

(b) It shall be the duty of the Credentials Committee:

(i) to receive all completed applications from the Secretary-Treasurer;

(ii) to conduct a comprehensive investigation of each applicant in accordance with the rules governing application;

(iii) to prepare a recommendation concerning each applicant and present this to the American Osteopathic Board of ..... at its next (annual) meeting.

Sec. 2. Examination Committee.

(a) There shall be an Examination Committee composed of the Chairman of this Board and not less than two additional Board members. The Chairman of this Board shall act as the Chairman of the Examination Committee.

(b) It shall be the duty of the Examination Committee to plan and to make preparations for the conduct of examinations in the special fields coming under the jurisdiction of this Board in accordance with the rules governing examinations as stated in Article IV, Section 1, Paragraph (h) of these Bylaws and in the Regulations and Requirements of this Board.

(c) The Examination Committee shall report to this Board the findings on the examination of each applicant.

Sec. 3. Advisory Board Committee.

(a) There shall be an Advisory Board Committee consisting of the Chairman and the Secretary-Treasurer of this Board.

(b) It shall be the duty of the Advisory Board Committee to represent the American Osteopathic Board of .... in all matters where such representation is required.

(c) The Chairman shall annually appoint as an alternate member of this Committee a member of the Board of..... ..... who shall be empowered to act for either regular member who is not in attendance.

ARTICLE III—DUTIES OF OFFICERS

Sec. 1. The duties of the Chairman shall be:

(a) to preside at all meetings;

(b) to appoint all committees and representatives to the Advisory Board for Osteopathic Specialists;

(c) to schedule meetings of this Board at such times and places as necessary to carry on the business of this Board;

(d) to supervise all examinations;

(e) to act as an ex officio member of all committees;

(f) to sign all certificates issued by this Board;

(g) to act as Chairman of the Examination Committee;

(h) to be a member of the Advisory Board Committee.

Sec. 2. The duties of the Vice-Chairman shall be:

(a) to assume the duties of the Chairman when the latter is absent or otherwise unable to fulfill them;

(b) to assist the Chairman in the discharge of his duties.

Sec. 3. The duties of the Secretary-Treasurer shall be:

(a) to keep on permanent file records of all proceedings, transactions, and rulings of this Board, and to keep on file all examination papers and case records for a period of 3 years;

(b) to have printed and distributed all certificates, application forms, circulars of information, etc., authorized by this Board and necessary for the proper functioning of this Board;

(c) to maintain in proper place and form the moneys of this Board and to issue an accounting of them at annual meetings or at such other times as requested by the Chairman of this Board;

(d) to keep a permanent file of all applications coming before this Board with a signed record of the action taken on each;

(e) to maintain a record of all certificate holders in good standing and to supply upon request to governmental agencies, hospitals, physicians, schools, and others entitled to such information, a list of holders of certificates in good standing;

(f) to have prepared in appropriate and complete form for presentation to the Review Committee of the Advisory Board for Osteopathic Specialists in support of recommendations for certification the application, examination record (written, oral, and practical), and other pertinent information requested; (See Rules of Procedure.)

(g) to serve as a representative of this Board to the Advisory Board for Osteopathic Specialists;

(h) to sign all certificates issued by this Board, as provided in Article V;

(i) to prepare an annual report in keeping with the Rules of Procedure for Specialty Certifying Boards of the work done by this Board, including a list of all applicants and the results of their examinations and a resume of the Board's finances. This report is to be presented at the annual meeting of the Advisory Board for Osteopathic Specialists and copies are to be supplied to the Chairman and Secretary of the Advisory Board and to the Executive Secretary of the American Osteopathic Association;

(j) to cooperate with the Executive Secretary of the American Osteopathic Association in all matters pertaining to the annual registration of certificate holders;

(k) to notify the Executive Secretary of the American Osteopathic Association and the Chairman and Secretary of the Advisory Board for Osteopathic Specialists of members and officers elected to this Board and of appointments to the Advisory Board for Osteopathic Specialists.

ARTICLE IV—REQUIREMENTS FOR CERTIFICATION

Sec. 1. To be eligible to receive a certificate of specialization from the American Osteopathic Board of .....

the applicant must meet all of the following minimum requirements, excepting as provided in Section 3 (and Section 4) of this Article:

(a) He must be a graduate of an approved osteopathic college.

(b) He must be licensed to practice in the state or territory where he conducts his specialty practice.

(c) He must have been a member in good standing of the American Osteopathic Association and of his state or divisional society for a continuous period of at least 3 years immediately prior to application for examination by this Board.

(d) He must have satisfactorily completed an internship of at least 1 year in a hospital approved for intern training by the American Osteopathic Association or satisfactory to this Board. If graduated in 1942 or prior thereto, the applicant must have had training of value equivalent to that of an acceptable internship as determined by this Board.

(e) He must be able to show evidence of conformity to the standards set in the Code of Ethics of the American Osteopathic Association.

(f) A period of not less than 3 years of special training related to the specialty shall be required, after the required 1 year of internship, or its equivalent, but not necessarily running 3 consecutive years. This Board may modify the requirement of 3 years' special training by allowing a credit of 1 year of special training for each 5 years of specialty practice for a total credit of not to exceed 2 years of the requirement, for physicians who graduated prior to 1946, but in no case may such applicant be accepted for examination without at least 1 year of special training as defined. This training shall include:

(i) Advanced study in the sciences: Anatomy, physiology, biochemistry, pathology, pharmacology, and such other basic sciences as are necessary to a mature and comprehensive understanding of the prevention, diagnosis, therapy, and management of the disorders involved in the specialty.

(ii) Active experience in the diagnosis and treatment in such amount and diversity that it will assure adequate training in the specialty.

The special training may be provided in colleges, laboratories, clinics, hospitals, or other facilities satisfactory to this Board, or by serving an acceptable assistantship to or studying under the preceptorship of a qualified specialist in this field, supplemented by prescribed study conforming to a plan approved by this Board.

The minimum 3-year period of special training may be made up of varying combinations of the several types mentioned above, as determined by this Board. It shall be this Board's duty to assist applicants in determining a suitable program of special training, but it is not this Board's function to supply the training. This Board will recognize as proper institutions for securing this training those institutions which are approved for special training by the approving agencies of the American Osteopathic Association, together with such others as this Board may determine to possess facilities and personnel adequate to provide proper training.

(g) He must practice as a specialist in his field for a period of at least 2 years subsequent to the minimum 3 years of special training. Specialty practice within each specialty field under this Board shall be defined in the Regulations and Requirements of this Board.

(h) Following satisfactory compliance with the prescribed requirements as to special training and specialty practice, the applicant shall be required to pass appropriate examinations planned to evaluate his understanding of the scientific bases of the problems involved in the specialty, his familiarity with the current advances in the specialty, and the possession of sound judgment and of a high degree of skill in the diagnostic and therapeutic procedures involved in the practice of the specialty. Oral, written, and clinical examinations shall be conducted and required in the case of each applicant. This Board may conduct the oral and written examinations at the end of the required 3 years of special training, but shall not conduct the practical or clinical examination until the required 2 years of specialty practice have been completed. The members of this Board shall personally review, if not perform, the grading of each written examination. The conduct of the clinical examinations may be delegated to committees of not fewer than two individuals maturely qualified in the specialty. A full description of the method of conducting the examination shall be formulated in this Board's Regulations and Requirements, and provision for re-examination shall be made.

(i) Applicants desiring examination for certification shall be required to file an application which shall set forth the applicant's qualifications for examination as stated in paragraphs (a), (b), (c), (d), (e), (f), and (g) above. The procedure for filing applications shall be set forth in the Regulations and Requirements and no application for action at any annual meeting of this Board shall be accepted after April 1st of that year.

Sec. 2. In the case of any applicant who was engaged in the practice of his specialty by 1939, or prior thereto, and who graduated prior to 1936, and who meets the general requirements stated in Section 1, (a), (b), (c), (d), and (e) above, and has maintained appropriate activity in American Osteopathic Association organizational work, specialty societies, hospital staff work, the pursuit of periodic postgraduate work, contributions to professional literature or otherwise has indicated his consistent interest and competence in his specialty, the requirements of this Article IV, Section 1, paragraphs (f) and (h) may be waived and he may be recommended for certification after passing an appropriate oral and/or clinical examination.

Sec. 3. Subject to the recommendations of the Advisory Board for Osteopathic Specialists and to the approval of the Board of Trustees of the American Osteopathic Association, the American Osteopathic Board of ---------- may require such further training in each of the specialty fields coming under its jurisdiction as in its judgment such field may require, provided that the additional requirements for each specialty field are clearly set forth in the Regulations and Requirements of this Board. Additions to requirements shall not go into effect until 1 year subsequent to the announcement of such change.

Sec. 4. If circumstances necessitate it, a section may be written and inserted at this point to provide for the fair handling of applicants already acting on the basis of commitments made by this Board prior to 12-15-46.

ARTICLE V—CERTIFICATES

Sec. 1. Issuance.

Certificates of specialization which have been approved by the Board of Trustees of the American Osteopathic Association shall be issued by the American Osteopathic Board of ---------- to applicants who have conformed to all requirements for certification described in Article IV of these Bylaws and who have received the recommendation of the Advisory Board for Osteopathic Specialists and the approval of the Board of Trustees of the American Osteopathic Association. Each such certificate shall be signed by the Chairman and the Secretary-Treasurer of this Board. No certificate is valid until it has been signed by the Executive Secretary of the American Osteopathic Association.

Sec. 2. No certificate shall be issued to an individual who is certified by another board, until the former certificate has been surrendered to the Executive Secretary of the American Osteopathic Association.

Sec. 3. Revocation.

This Board shall have the power to recommend to the Advisory Board for Osteopathic Specialists and the Board of Trustees of the American Osteopathic Association the revocation of the certificate of any holder whose certificate was obtained by fraud or misrepresentation, who unduly advertises, exploits his certificate, violates the Code of Ethics of the American Osteopathic Association, or otherwise disqualifies himself.

Sec. 4. To remain in good standing the certificate holder shall pay an annual registration fee to the Executive Secretary of the American Osteopathic Association, as provided in the Rules of Procedure for Specialty Certifying Boards, as compiled by the Advisory Board for Osteopathic Specialists.

ARTICLE VI—MEETINGS

Sec. 1. The American Osteopathic Board of ..... shall hold a regular annual meeting to transact business and to conduct examinations at the time and place of the annual meeting of the American Osteopathic Association (or at the annual meeting of its respective specialty college).

Sec. 2. Special meetings of this Board which are deemed necessary for the transaction of business may be called with the approval of the majority of the members of this Board provided all members are formally notified of the called meeting and its purpose, not less than 30 days before the date set for the meeting.

Sec. 3. For the transaction of business at any meeting of this Board, ... members shall constitute a quorum.

ARTICLE VII—AMENDMENT

Sec. 1. Subject to the review and recommendation of the Advisory Board for Osteopathic Specialists and to the approval of the Board of Trustees of the American Osteopathic Association, these Bylaws may be amended by a two-thirds vote of the total membership of this Board (or three-fifths in a five-member Board) at any meeting provided each member has been notified at least 30 days prior to the date of the meeting of its being called and of the intention to amend.

AMERICAN OSTEOPATHIC BOARD OF DERMATOLOGY AND SYPHILOLOGY

Ronald W. MacCorkell, Chairman, Los Angeles
Edwin H. Cressman, Vice Chairman, Philadelphia
Anthony E. Scardino, Kansas City, Mo.
Cecil D. Underwood, Los Angeles
James D. Stover, Secretary-Treasurer, Detroit

DEFINITION OF SPECIALTY PRACTICE

For the purpose of the operation of this Board the following divisions of practice are defined:

a. The practice of dermatology shall consist of and include the diagnosis and the surgical and nonsurgical management of the diseases of the skin and its appendages.

b. The practice of syphilology shall consist of and include the diagnosis and the surgical and nonsurgical management of syphilis in all its phases and stages.

c. A specialty practice, as defined by this Board, shall consist of not less than 90 per cent dermatology and syphilology.

REQUIREMENTS FOR CERTIFICATION

Section 1. To be eligible to receive a certificate of specialization from the American Osteopathic Board of Dermatology and Syphilology, the applicant must meet all of the following minimum requirements, excepting as provided in Section 2 of this Article:

(a) He must be a graduate of an approved osteopathic college.

(b) He must be licensed to practice in the state or territory where he conducts his specialty practice.

(c) He must have been a member in good standing of the American Osteopathic Association and of his state or divisional society for a continuous period of at least 3 years immediately prior to application for examination by this Board.

(d) He must have satisfactorily completed an internship of at least 1 year in a hospital approved for intern training by the American Osteopathic Association or satisfactory to this Board. If graduated in 1942 or prior thereto, the applicant must have had training of value equivalent to that of an acceptable internship as determined by this Board.

(e) He must be able to show evidence of conformity to the standards set in the Code of Ethics of the American Osteopathic Association.

(f) A period of not less than 3 years of special training related to the specialty shall be required, after the required 1 year of internship, or its equivalent, but not necessarily running 3 consecutive years. This Board may modify the requirement of 3 years' special training by allowing a credit of 1 year of special training for each 5 years of specialty practice for a total credit of not to exceed 2 years of the requirement, for physicians who graduated prior to 1946, but in no case may such applicant be accepted for examination without at least 1 year of special training as defined. This training shall include:

(i) Advanced study in the sciences: Anatomy, physiology, biochemistry, pathology, pharmacology, and such other basic sciences as are necessary to a mature and comprehensive understanding of the prevention, diagnosis, therapy, and management of the disorders involved in the specialty.

(ii) Active experience in the diagnosis and treatment in such amount and diversity that it will assure adequate training in the specialty.

The special training may be provided in colleges, laboratories, clinics, hospitals, or other facilities satisfactory to this Board, or by serving an acceptable assistantship to, or studying under the preceptorship of, a qualified specialist in this field, supplemented by prescribed study conforming to a plan approved by this Board.

The minimum 3-year period of special training may be made up of varying combinations of the several types mentioned above, as determined by this Board. It shall be this Board's duty to assist applicants in determining a suitable program of special training, but it is not this Board's function to supply the training. This Board will recognize as proper institutions for securing this training those institutions which are approved for special training by the approving agencies of the American Osteopathic Association, together with such others as this Board may determine to possess facilities and personnel adequate to provide proper training.

(g) He must practice as a specialist in his field for a period of at least 2 years subsequent to the minimum 3 years of special training. Specialty practice within each specialty field under this Board shall be defined in the Regulations and Requirements of this Board.

(h) Following satisfactory compliance with the prescribed requirements as to special training and specialty practice, the applicant shall be required to pass appropriate examinations planned to evaluate his understanding of the scientific bases of the problems involved in the specialty, his familiarity with the current advances in the specialty, the possession of sound judgment and of a high degree of skill in the diagnostic and therapeutic procedures involved in the practice of the specialty. Oral, written, and clinical examinations shall be conducted and required in the case of each applicant. This Board may conduct the oral and written examinations at the end of the required 3 years of special training, but shall not conduct the practical or clinical examination until the required 2 years of specialty practice have been completed. The members of this Board shall personally review, if not perform, the grading of each written examination. The conduct of the clinical examinations may be delegated to committees of not fewer than two individuals maturely qualified in the specialty. A full description of the method of conducting the examination shall be formulated in this Board's Regulations and Requirements, and provision for re-examination shall be made.

(i) Applicants desiring examination for certification shall be required to file an application which shall set forth the applicant's qualifications for examination as stated in paragraphs (a), (b), (c), (d), (e), (f), and (g) above. The procedure for filing applications shall be set forth in the Regulations and Requirements and no application for action at any annual meeting of the Board shall be accepted after April 1st of that year.

Section 2. In the case of any applicant who was engaged in the practice of his specialty by 1939 or prior thereto, and who graduated prior to 1936 and who meets the general requirements stated in Section 1, (a), (b), (c), (d), and (e) above and has maintained appropriate activity in American Osteopathic Association organizational work, specialty societies, hospital staff work, the pursuit of periodic postgraduate work, contributions to professional literature or otherwise has indicated his consistent interest and competence in his specialty, the requirements of this Article IV, Section 1, paragraphs (f) and (h) may be waived, and he may be recommended for certification after passing an appropriate oral and/or clinical examination.

Section 3. Subject to the recommendations of the Advisory Board for Osteopathic Specialists and to the approval of the

Board of Trustees of the American Osteopathic Association, the American Osteopathic Board of Dermatology and Syphilology may require such further training in each of the specialty fields coming under its jurisdiction as in its judgment such field may require, provided that the additional requirements for each specialty field are clearly set forth in the Regulations and Requirements of this Board. Additions to requirements shall not go into effect until 1 year subsequent to the announcement of such change.

AMERICAN OSTEOPATHIC BOARD OF INTERNAL MEDICINE

Basil Harris, Chairman, Los Angeles
Stuart F. Harkness, Vice Chairman, Des Moines, Iowa
Neil R. Kitchen, Detroit
John L. Crowther, Bangor, Me.
Maxwell R. Brothers, Los Angeles
G. A. Whetstine, Wilton Junction, Iowa
William F. Daiber, Philadelphia
Charles M. Worrell, Harrisburg, Pa.
Glennard E. Lahrson, Secretary-Treasurer, Oakland, Calif.

DEFINITION OF SPECIALTY PRACTICE

The practice of internal medicine is devoted primarily to the application of subjective, objective, and laboratory procedures in studying and evaluating the affections, diseases, and functional disorders of the circulatory, respiratory, digestive, endocrine, metabolic, musculoskeletal, hematopoietic, and eliminative systems of the human body to:

a. the correlation of data thus secured with clinical observations to reach diagnostic conclusions;
b. the management of cases within this field by the utilization of all nonsurgical measures;
c. assist in planning the therapeutic utilization of the technics of other specialty branches of medical and surgical practice in the care of patients.

The practice of internal medicine does not include the treatment of the organs of special sense or the organs of the reproductive system, except as to their endocrine relations, and excludes the use of instrumental procedures ordinarily performed by surgeons or surgical specialists.

REQUIREMENTS FOR CERTIFICATION

A. *Educational Qualifications.*—To be eligible to receive a certificate of specialization from the American Osteopathic Board of Internal Medicine the applicant must meet all of the minimum requirements as set forth in the Bylaws of the American Osteopathic Board of Internal Medicine, Article IV, Sections 1, 2, and 3.

The 3-year period of training related to the specialty as required in the Bylaws, Article IV, Section 1, (f) is further defined:

1. A period of not less than 3 years of special training related to this specialty shall be required, after the required 1 year of internship or its equivalent, but not necessarily running 3 consecutive years. This Board may modify the requirement of 3 years' special training by allowing a credit of 1 year of special training for each 5 years of specialty practice for a total credit of not to exceed 2 years of the requirement for physicians who graduated prior to 1946, but in no case may such applicant be accepted for examination without at least 1 year of special training as defined.

A year of special training shall be interpreted to mean 12 months; a training hour is interpreted to mean a platform hour. This training shall include:

1. Advanced study in the sciences: Anatomy, physiology, biochemistry, pathology, pharmacology, and such other basic sciences as are necessary to a mature and comprehensive understanding of the prevention, diagnosis, therapy, and management of the disorders involved in the specialty.

2. Active experience in the diagnosis and treatment in such amount and diversity that it will assure adequate training in the specialty.

3. To obtain a mature and comprehensive understanding of the Basic Sciences this Board recommends a minimum of 160 hours of basic science instruction on the graduate level, divided as follows:

Anatomy	30 hours
Physiology	37 hours
Pathology	37 hours
Biochemistry	15 hours
Bacteriology	20 hours
Pharmacology	21 hours

4. Didactic and clinical instruction to assure adequate training in this specialty is recommended in the various fields of internal medicine totaling 320 hours. This instruction must include cardiology, electrocardiography, peripheral vascular diseases, medical diseases of the kidney, gastroenterology, metabolic diseases, endocrinology, hematology, clinical pathology, respiratory diseases, diseases of the biliary system, musculoskeletal system, x-ray interpretation, ophthalmoscopy, and osteopathic principles and therapeutics, including materia medica as these relate to internal medicine.

5. The special training may be provided in colleges, laboratories, clinics, hospitals, or other facilities satisfactory to this Board, which may include:

a. *Preceptorship.*—All preceptorship training programs must be approved by the Committee on Accreditation of Postgraduate Training and the Board of Trustees of the American Osteopathic Association on recommendation of this Board. The preceptorship training program shall be full time for a period of 3 years, but not necessarily running 3 consecutive years. The preceptorship training program shall be previously submitted to and approved by the Committee on Accreditation of Postgraduate Training of the American Osteopathic Association and the Board of Trustees of the American Osteopathic Association on recommendation of this Board. The preceptor and trainee must likewise be qualified and approved by the above agencies. The trainee shall not maintain an independent practice.

b. *Full-time Assistantship.*—The assistantship must extend for a minimum period of 3 years to a certified internist acceptable to this Board. A full explanation of the scope and diversity of practice, together with any other information that may be from time to time requested, shall be presented to this Board for approval.

c. *Residency.*—Full-time residency in internal medicine shall be in a hospital approved for resident training by the Bureau of Hospitals of the American Osteopathic Association. Appropriate credit toward the special training requirement of this Board shall be allowed for full-time approved residencies of 1, 2, or 3 years in internal medicine.

6. It shall be this Board's duty to assist applicants in determining a suitable program of special training, but it is not this Board's function to supply the training. This Board will recognize as proper institutions for securing this training those institutions which are approved for special training by the approving agencies of the American Osteopathic Association, together with such others as this Board may determine to possess facilities and personnel adequate to provide proper training. An affidavit shall be furnished upon the request of this Board.

B. *Membership Requirements.*—Membership qualifications are those as stated in the Bylaws of the American Osteopathic Board of Internal Medicine, Article IV, Section 1, (c).

C. *Graduation Requirements.*—The graduation requirements with exceptions are those as stated in the Bylaws of the American Osteopathic Board of Internal Medicine, Article IV, Section 2.

D. *Years of Specialty Practice Required.*—The applicant must have practiced as a specialist in the field of internal medicine for a period of at least 2 years subsequent to the minimum of 3 years of special training, as defined by this Board, before he is eligible for clinical examination.

E. *Percentage of Practice in Internal Medicine.*—The applicant is expected to have practiced according to the "Definition of the Practice of Internal Medicine" as printed in the Regulations and Requirements of the American Osteopathic Board of Internal Medicine, Part II, 1. An affidavit shall be furnished on request of the Board.

F. *Case Records.*—Specially prepared case records for presentation to this Board are not required, however, during the investigation by the Credentials Committee the applicant's office and/or hospital records shall be made available on request

of the Committee. Such original records are not to be removed from the office or hospital.

G. *Copy of Published Articles.*—Authenticated copies of published articles are to be furnished on request of the Credentials Committee. No thesis is required.

H. *Privilege of Re-Examination.*—No applicant will be re-examined within a period of 1 year following an initial failure. Re-application will be necessary to retake the examination. If the applicant fails the second examination, a 2-year period of further special study and practice satisfactory to the American Osteopathic Board of Internal Medicine is required. A re-application will be necessary to retake the examination after the second failure.

AMERICAN OSTEOPATHIC BOARD OF NEUROLOGY AND PSYCHIATRY

K. Grosvenor Bailey, Chairman, Los Angeles
Cecil Harris, Vice Chairman, Philadelphia
Fred M. Still, Macon, Mo.
Randall J. Chapman, Burbank, Calif.
Thomas J. Meyers, Secretary-Treasurer, Pasadena, Calif.

DEFINITION OF SPECIALTY PRACTICE

For the purpose of the operation of this Board, the following divisions of practice are defined:

a. The specialty of neurology shall consist of that division of the practice of osteopathic medicine embracing disorders of the organic nervous system. It shall include all diagnostic procedures and examination technics giving an understanding of the problems involved. Included will be conditions affecting the peripheral nerves, as well as the brain and central nervous system, the autonomic nervous system, and endocrine syndromes, and specific conditions such as epilepsy, migraine, tics, etc., are included. It does not include neurosurgery.

b. The specialty of psychiatry includes that division of the practice of osteopathic medicine involving functional and organic disturbances of the mind, emotions, and nervous system. It includes personality problems, addictions, behavior difficulties, insanities, marital problems, and sexual and social anomalies. It covers counseling and psychotherapy in all its aspects, as well as diagnostic methods leading to an understanding of the dynamics of the mind. It includes legal and child psychiatry and the field of psychosomatics. It includes electroshock, hydrotherapy, electronarcosis, and other physical modalities applied to the treatment of the mentally ill. It does not include neurosurgery.

c. The specialty of neurology and psychiatry includes all of the divisions of osteopathic medicine as combined with the definitions of the specialty of neurology and the specialty of psychiatry, as stated in a. and b. above.

Note: For the definition of neurosurgery and for the requirements, see American Osteopathic Board of Surgery.

REQUIREMENTS FOR CERTIFICATION

Sec. 1. To be eligible to receive a certificate of specialization from the American Osteopathic Board of Neurology and Psychiatry the applicant must meet all of the following minimum requirements, excepting as provided in Article IV, Section 3 and Section 4 of the Bylaws:

(a) He must have graduated from an approved osteopathic college.

(b) He must be licensed to practice in the state or territory where he conducts his specialty practice.

(c) He must have been a member in good standing of the American Osteopathic Association and of his state or divisional society for a continuous period of at least 3 years immediately prior to application for examination by this Board.

(d) He must have satisfactorily completed an internship of at least 1 year in a hospital approved for intern training by the American Osteopathic Association or satisfactory to this Board. If graduated in 1942 or prior thereto, the applicant must have had training of value equivalent to that of an acceptable internship as determined by this Board.

(e) He must be able to show evidence of conformity to the standards set in the Code of Ethics of the American Osteopathic Association.

(f) A period of not less than 3 years of special training related to the specialty shall be required, after the required 1 year of internship, or its equivalent, but not necessarily running 3 consecutive years. This Board may modify the requirement of 3 years' special training by allowing a credit of 1 year of special training for each 5 years of specialty practice for a total credit of not to exceed 2 years of the requirement, for physicians who graduated prior to 1946, but in no case may such applicant be accepted for examination without at least 1 year of special training as defined. For certification in neurology and psychiatry, the training period shall be not less than 5 years. This training shall include:

(i) Advanced study in the sciences: Anatomy, physiology, biochemistry, pathology, pharmacology, and such other basic sciences as are necessary to a mature and comprehensive understanding of the prevention, diagnosis, therapy, and management of the disorders involved in the specialty.

(ii) Active experience in the diagnosis and treatment in such amount and diversity that it will assure adequate training in the specialty.

The 3-year period of special training as required in Section 1, (f), above, is further defined:

1. For certification in Neurology the following shall be included in an acceptable training program, residency, or preceptorship:

The amount of time of training shall total 3 calendar years or 6,000 clock hours and shall include:

Basic Science	100 clock hours
Psychiatry and Psychology	500 clock hours
Neurological Surgery Observation	500 clock hours
Didactic Courses	500 clock hours

A maximum of 1,000 hours may be granted for case reports, 2 hours being allowed for each. A maximum of 500 such reports may be presented. Such reports may be considered if they are submitted in an approved form and signed by the preceptor. Each report must include sufficient information to adequately describe the problem, support of diagnosis, data for differential diagnostic study, an estimate of the prognosis, and a suggested plan of treatment. Clinical training shall include: Electroencephalography, electromyography, reactions of degeneration, neuro-ophthalmoscopy, spinal taps, cisternal puncture, encephalography, ventriculography, stellate ganglion blocks, angiography, myelography, and autopsy studies. The amount of clinical training shall be 3,400 clock hours. Furthermore, the clinical material utilized must include a sampling of: Degenerative diseases, traumatic conditions, convulsive disorders, infective and toxic problems, neoplasms of the nervous system, deficiency states, cerebro-vascular problems, and geriatric and pediatric neurology.

2. For certification in Psychiatry the following shall be included in an acceptable training program, residency, or preceptorship:

The amount of time of training shall total 3 calendar years or 6,000 clock hours and shall include:

Psychological Subjects, including Testing	500 clock hours
Neurology and Neurological Subjects	500 clock hours
Basic Science	100 clock hours

A maximum of 1,000 hours may be granted for case reports, 2 hours being allowed for each. A maximum of 500 such reports may be presented. Such reports may be considered if they are submitted in an approved form and signed by the preceptor. Psychoanalysis to which the applicant has submitted himself for treatment or for training will be credited for a maximum amount of 200 clock hours. The training program for certification in Psychiatry shall be primarily of a clinical nature and must be conducted as actual contact with patients under supervision. The full range of psychiatric conditions shall include: Functional psychotics, neuroses of all kinds, sexual aberrations, organic mental conditions, geriatric psychiatry, pediatric psychiatry, marital problems, neurologic psychiatry, psychosomatics, mental deficiency, epilepsy, narcolepsy, alcoholism, psychopathic personalities, syphilis of the nervous system, and legal psychiatry. In addition, the applicant shall acquire familiarity with the theory of Psychiatry and the technics of: Electro-shock treatment, physiotherapy in psychiatry, hydrotherapy in psychiatry, pharmacology in psychiatry, dietetics in

psychiatry, occupational therapy, psychotherapy (at least an operational ability), hypnosis and suggestion, child guidance, marital counseling, elementary psychological testing, and psychiatric examination procedure. Only work done in clinically oriented disciplines will be credited. The policy of this Board is to scrutinize critically all preceptor training programs in psychiatry because of its limitations and its questonable value. Unapproved preceptor training programs will not be recognized by this Board. The minimum amount of clinical training shall be 3,400 clock hours.

3. For certification in Neurology and Psychiatry an acceptable training program shall consist of a minimum of 5 years' full-time training or a total of 10,000 clock hours. This training shall consist of 2 years devoted exclusively to the study of Neurology and 2 years devoted exclusively to the study of Psychiatry and 1 year of study which shall include material from both fields and the Basic Sciences.

A holder of a certificate in Neurology or a holder of a certificate in Psychiatry shall be required to complete a minimum of 2 years' additional training to qualify for a certificate in Neurology and Psychiatry. The required 2 years' additional training program must be approved by the American Osteopathic Board of Neurology and Psychiatry.

The special training may be provided in colleges, laboratories, clinics, hospitals, or other facilities satisfactory to this Board, or by serving an acceptable assistantship to or studying under the preceptorship of a qualified specialist in this field, supplemented by prescribed study conforming to a plan approved by this Board.

The minimum 3-year period of special training may be made up of varying combinations of the several types mentioned above, as determined by this Board. It shall be this Board's duty to assist applicants in determining a suitable program of special training, but it is not this Board's function to supply the training. This Board will recognize as proper institutions for securing this training those institutions which are approved for special training by the approving agencies of the American Osteopathic Association, together with such others as this Board may determine to possess facilities and personnel adequate to provide proper training.

(g) He must practice as a specialist in his field for a period of at least 2 years subsequent to the minimum 3 years of special training. At least 80 per cent of the applicant's practice must be in the specialty field.

(h) Following satisfactory compliance with the prescribed requirements as to special training and specialty practice, the applicant shall be required to pass appropriate examinations planned to evaluate his understanding of the scientific bases of the problems involved in the specialty, his familiarity with the current advances in the specialty and the possession of sound judgment and of a high degree of skill in the diagnostic and therapeutic procedures involved in the practice of the specialty. Oral, written, and clinical examinations shall be conducted and required in the case of each applicant. This Board may conduct the oral and written examinations at the end of the required 3 years of special training, but shall not conduct the practical or clinical examination until the required 2 years of specialty practice have been completed. The members of this Board shall personally review, if not perform, the grading of each written examination. The conduct of the clinical examinations may be delegated to committees of not fewer than two individuals maturely qualified in the specialty. A full description of the method of conducting the examination shall be formulated in this Board's Regulations and Requirements, and provision for re-examination shall be made.

Sec. 2. In the case of any applicant who was engaged in the practice of his specialty by 1939, or prior thereto, and who graduated prior to 1936, and who meets the general requirements stated in Section 1, (a), (b), (c), (d), and (e) above and has maintained appropriate activity in American Osteopathic Association organizational work, specialty societies, hospital staff work, the pursuit of periodic postgraduate work, contributions to professional literature, or otherwise has indicated his consistent interest and competence in his specialty, the requirements of Article IV, Section 1, paragraphs (f) and (h) may be waived, and he may be recommended for certification after passing an appropriate oral and/or clinical examination.

Sec. 3. Subject to the recommendations of the Advisory Board for Osteopathic Specialists and to the approval of the Board of Trustees of the American Osteopathic Association, the American Osteopathic Board of Neurology and Psychiatry may require such further training in each of the specialty fields coming under its jurisdiction as in its judgment such field may require, provided that the additional requirements for each specialty field are clearly set forth in the Regulations and Requirements of this Board. Additions to requirements shall not go into effect until 1 year subsequent to the announcement of such change.

AMERICAN OSTEOPATHIC BOARD OF OBSTETRICS AND GYNECOLOGY

Dorothy J. Marsh, Chairman, Glendale, Calif.
Kenneth A. Scott, Vice Chairman, Providence, R. I.
Homer R. Sprague, Lakewood, Ohio
Arthur B. Funnell, Denver
H. C. Bruckner, Flint, Mich.
Charles J. Mount III, Burbank, Calif.
A. J. Still, Flint, Mich.
Frank E. Gruber, Philadelphia
Jacquelin Bryson, Secretary-Treasurer, Denver

DEFINITION OF SPECIALTY PRACTICE

a. Obstetrics: The practice of obstetrics shall be defined as the diagnosis and management of all states presented in cases of pregnancy from the time of conception through the postpartum period by use of any or all means excepting those involving laparotomy or vaginal cesarian section.

b. Gynecology: The practice of gynecology shall be defined as the diagnosis and treatment of diseases peculiar to the female, and because of the close relationship does not exclude affections of the mammary gland and urinary tract in the female, but does exclude all major surgical procedures.

(1) The surgical procedures included under Gynecology are:

(a) Cervical cautery, conization, and biopsy
(b) Endometrial biopsy
(c) Diagnostic dilatation and curettage
(d) Hysterosalpingographies and tubal insufflations
(e) Incision of superficial abscesses
(f) Biopsy and excision of superficial tumors of the vulva
(g) Female circumcision
(h) Breast biopsies

c. Obstetrical-Gynecological Surgery: The practice of obstetrical-gynecological surgery shall consist of and include that branch of medical science, art, and practice which is concerned with major operative procedures:

(1) Within the abdomen and pelvis upon the female generative system or structures related thereto;
(2) Major plastic procedures upon the vaginal tract by manual and instrumental means;
(3) And mammary gland.

REQUIREMENTS FOR CERTIFICATION

To be eligible to receive a certificate of specialization from the American Osteopathic Board of Obstetrics and Gynecology the applicant must meet all of the following minimum requirements:

a. He must be a graduate of an approved osteopathic college.

b. He must be licensed to practice in the state or territory where he conducts his specialty practice.

c. He must have been a member in good standing of the American Osteopathic Association and of his state or divisional society for a continuous period of at least 3 years prior to application for examination by this Board.

d. He must have satisfactorily completed an internship of at least 1 year in a hospital approved for intern training by the American Osteopathic Association or satisfactory to this Board. If graduated in 1942 or prior thereto, the applicant must have

had training of value equivalent to that of an acceptable internship as determined by this Board.

e. He must be able to show evidence of conformity to the standards set in the Code of Ethics of the American Osteopathic Association.

f. A period of not less than 3 years of special training related to the specialty shall be required, after the required 1 year of internship, or its equivalent, but not necessarily immediately following the internship nor running 3 consecutive years, except that in the case of applicants who graduated prior to 1946, this Board may modify the requirement of 3 years of special training by allowing a credit of 1 year of special training for each 5 years of specialty practice for a total credit of not to exceed 2 years of the requirement, but in no case may such an applicant graduated prior to 1946 be accepted for examination without at least 1 year of special training as defined. This training shall include:

(i) Advanced study in the sciences: Anatomy, physiology, biochemistry, pathology, pharmacology, and such other basic sciences as are necessary to a mature and comprehensive understanding of the prevention, diagnosis, therapy, and management of the disorders involved in the specialty.

A minimum of 100 clock hours shall be required in the basic science training programs, subdivided as follows:

(a) A minimum of 10 clock hours each in the following subjects: Anatomy, physiology, biochemistry, pathology, and pharmacology.

(b) The remainder of the minimum required hours may be taken in any of the subjects mentioned or in other basic sciences related to the specialty.

(ii) Active experience in diagnosis and treatment in such amount and diversity that it will assure adequate training in the specialty.

The special training may be provided in colleges, laboratories, clinics, hospitals, or other facilities satisfactory to this Board, or by serving an acceptable assistantship to or studying under the preceptorship of a qualified specialist in this field, supplemented by prescribed study conforming to a plan approved by this Board.

The minimum 3-year period of special training may be made up of varying combinations of the several types mentioned above, as determined by this Board.

It shall be this Board's duty to assist applicants in determining a suitable program of special training, but it is not this Board's function to supply the training.

This Board will recognize as proper institutions for securing this training those institutions which are approved for special training in Obstetrics and Gynecology and Obstetrical-Gynecological Surgery by the approving agencies of the American Osteopathic Association, together with such others as this Board may determine to possess facilities and personnel adequate to provide proper training.

This Board will also recognize as proper institutions for securing this training those institutions which are approved for special training in general or gynecological surgery by the approving agencies of the American Osteopathic Association, provided that the total 3-year training period includes the required training in Obstetrics and Gynecology and Obstetrical-Gynecological Surgery, together with such others as this Board may determine to possess facilities and personnel adequate to provide proper training.

g. He must practice as a specialist in his field for a period of at least 2 years subsequent to the minimum 3 years of special training as defined by this Board prior to being examined.

h. Percentage of practice in the field covered by this specialty shall be not less than 60 per cent. The applicant must supply a notarized affidavit of the foregoing.

i. The applicant shall furnish an affidavit of having been first assistant to a qualified specialist in the management of not less than 50 pathological pelvic deliveries as encountered during his assistantship, and 200 cases of a gynecological nature.

j. The applicant must show notarized documented evidence of handling, on his own responsibility, not less than 25 pathological pelvic deliveries and such other nonpathological deliveries as were encountered in the practice of the specialty.

k. The applicant must show notarized documented evidence of handling, as a responsible physician, 100 gynecological cases in which he shall have (a) made a complete examination, including laboratory studies; (b) determined a diagnosis; (c) recommended a gynecological or obstetrical-gynecological surgical treatment; (d) observed or participated in a surgical correction of a pathology found, or performed the gynecological or obstetrical-gynecological surgical treatment; and (e) followed the patient through her convalescence to recovery. A reasonable proportion of obstetrical-gynecological surgical and gynecological cases shall be included.

l. The applicant shall send to the Secretary-Treasurer of this Board authentic copies of 15 pathological obstetrical case records, and 10 complicated gynecological case records. The applicant must file an affidavit certifying that the records are exact copies of authentic records in his files, and that he personally cared for the cases presented. All records must be presented in printed form. The obstetrical case records must include a history, physical examination, routine and special laboratory examinations, antepartum, labor, delivery, and postpartum progress records of sufficient quality to clearly reflect the detailed management of the case to the time of dismissal. The gynecological case records shall include history, physical examination, routine and special laboratory examinations, diagnosis, detailed treatment notes, progress notes, and case summary.

m. Thesis:

1. The applicant shall submit a thesis which shall be a report of an original investigation in the specialty field by the applicant or a review of the literature to which the applicant shall add personal experiences referable to the subject matter. This Board may accept a previously published article on a subject in the specialty fields covered by this Board. Grading of the article will be based on English composition and neatness as well as upon the subject matter.

2. Unacceptable Case Records and Thesis

This Board reserves the right to refuse for credit any case record or records or any thesis if, in its judgment, they do not conform to the standards previously mentioned.

n. Following satisfactory compliance with the prescribed requirements as to special training and specialty practice, the applicant shall be required to pass appropriate examinations planned to evaluate his understanding of the scientific bases of the problems involved in the specialty, his familiarity with the current advances in the specialty, and the possession of sound judgment and of a high degree of skill in the diagnostic and therapeutic procedures involved in the practice of his specialty. Oral, written, and clinical examinations shall be conducted and required in the case of each applicant. The members of this Board shall personally review, if not perform, the grading of each written examination. The conduct of the clinical examinations may be delegated to committees of not fewer than two individuals maturely qualified in the specialty.

o. Modification of requirements:

In the case of any applicant who was engaged in the practice of his specialty by 1939, or prior thereto, and who graduated prior to 1936, and who meets the general requirements stated in Article IV, Section 1, (a), (b), (c), (d), and (e) of the Bylaws of this Board, and has maintained appropriate activity in American Osteopathic Association organizational work, specialty societies, hospital staff work, the pursuit of periodic postgraduate work, contributions to professional literature, or otherwise has indicated his consistent interest and competence in his specialty field, the requirements of Article IV, Section 1, paragraphs (f) and (h) of the Bylaws of this Board may be waived and he may be recommended for certification after passing an appropriate oral and/or clinical examination.

OBSTETRICAL-GYNECOLOGICAL SURGERY

Requirements peculiar to the certification in Obstetrical-Gynecological Surgery:

1. Percentage of practice by the applicant in the Obstetrical-Gynecological Surgical phases shall not be less than 75 per cent. The applicant must supply a notarized affidavit of the foregoing.

2. The applicant shall furnish an affidavit of having been first assistant to a qualified specialist in the management of not less than 50 pathological pelvic deliveries and such other non-

pathological deliveries as were encountered during his assistantship.

3. The applicant must show notarized documented evidence of handling on his own responsibility not less than 25 pathological pelvic deliveries and such other nonpathological deliveries as were encountered in the practice of the specialty.

4. He shall have assisted in the performance of not less than 400 major surgical operations, 200 of which must be of a major obstetrical-gynecological nature. Not more than 25 per cent of any one surgical procedure shall be permitted for accreditation towards the required number of operative assistantships.

5. He shall have performed a minimum of 200 major surgical operations in which he was the responsible surgeon, 100 of which must be of a major obstetrical-gynecological nature. Not more than 25 per cent of any one surgical procedure shall be permitted for accreditation towards the required number of operative procedures performed on his own responsibility.

6. The applicant shall send to the Secretary-Treasurer of this Board authentic copies of 25 case records of major obstetrical-gynecological surgical procedures. The applicant must file an affidavit certifying that the records are exact copies of authentic records in his files and that he personally cared for the cases presented. All records must be presented in printed form. The case records must include a history, physical examination, all preoperative diagnostic procedures, operating technique, surgical findings, progress notes, pathological reports, and case summary up to the date of discharge from his care.

7. These records become the property of this Board and shall be placed on file with the Secretary-Treasurer of this Board for a minimum of 3 years.

8. He shall demonstrate his fitness to take the examination in any other manner required by this Board.

AMERICAN OSTEOPATHIC BOARD OF OPHTHALMOLOGY AND OTORHINOLARYNGOLOGY

Preston J. Stack, Chairman, Los Angeles
J. Ernest Leuzinger, Vice Chairman, Philadelphia
Lyman A. Lydic, Dayton, Ohio
C. L. Attebery, Kirksville, Mo.
C. M. Mayberry, East Liverpool, Ohio
Ralph S. Licklider, Secretary-Treasurer, Columbus, Ohio
C. C. Foster, Executive Secretary, Lakewood, Ohio

DEFINITION OF SPECIALTY PRACTICE

Sec. 1. For the purpose of the operation of this Board, the following divisions of practice are defined:

(a) The practice of ophthalmology shall consist of the diagnosis and treatment of the disorders and diseases of the eye and its adnexa, including refraction.

(b) The practice of otorhinolaryngology shall include the diagnosis and treatment of disorders and diseases of the ear, nose, and throat. It may include such other specialties as have a definite relationship to otorhinolaryngology.

(c) The practice of orofacial plastic surgery shall include the diagnosis, medical and surgical treatment and repair of developmental, congenital and acquired deformities of the mouth and face, to include the entire area of the head and neck.

REQUIREMENTS FOR CERTIFICATION

Sec. 1. To be eligible to receive a certificate of specialization from the American Osteopathic Board of Ophthalmology and Otorhinolaryngology the applicant must meet all of the following minimum requirements, excepting as provided in Section 3 and Section 4 of this Article:

(a) He must be a graduate of an approved osteopathic college.

(b) He must be licensed to practice in the state or territory where he conducts his specialty practice.

(c) He must have been a member in good standing of the American Osteopathic Association and of his state or divisional society for a continuous period of at least 3 years immediately prior to application for examination by this Board, and, if successful in passing his examination, he shall remain a member in good standing in the American Osteopathic Association and in his state or divisional society.

(d) He must have satisfactorily completed an internship of at least 1 year in a hospital approved for intern training by the American Osteopathic Association, or satisfactory to the American Osteopathic Board of Ophthalmology and Otorhinolaryngology. If the applicant was graduated in 1942, or prior thereto, he must furnish evidence of training of equal value satisfactory to the American Osteopathic Board of Ophthalmology and Otorhinolaryngology.

(e) He shall be, and if certified continue to be, favorably known and recognized in his community and by his clientele as an osteopathic physician who is specializing in the practice of ophthalmology and/or otorhinolaryngology, in orofacial plastic surgery, or a specialty coming under the jurisdiction of this Board. He must be able to show evidence of conformity to the standards set in the Code of Ethics of the American Osteopathic Association.

(f) He must provide notarized documentary evidence of a minimum of 3 years of special training in ophthalmology and/or otorhinolaryngology, or in orofacial plastic surgery, after the required 1 year of internship, or its equivalent, but not necessarily running 3 consecutive years. In the case of applicants who graduated prior to 1946, this Board may modify the requirement of 3 years of special training by allowing a credit of 1 year of special training for each 5 years of specialty practice, for a total of not to exceed 2 years of the requirement, but in no case may such applicant be accepted for examination without at least 1 year of special training. This training shall include:

(i) Advanced study in the sciences: Anatomy, physiology, biochemistry, pathology, pharmacology, and such other basic sciences as are necessary to a mature and comprehensive understanding of the prevention, diagnosis, therapy, and management of the disorders involved in the specialty.

(ii) Active experience in the diagnosis and treatment in such amount and diversity that it will assure adequate training in the specialty.

The special training may be provided in colleges, laboratories, clinics, hospitals, or other facilities satisfactory to this Board, or by serving an acceptable assistantship to or studying under the preceptorship of a qualified specialist in this field, supplemented by prescribed study conforming to a plan approved by this Board.

The minimum 3-year period of special training may be made up of varying combinations of the several types mentioned above, as determined by this Board.

(a) The training may consist of a 5-year assistantship to a certified specialist approved by this Board and by the approving agencies of the American Osteopathic Association, during which time he shall have assisted in at least 300 major surgical operations and shall have devoted at least 50 per cent of his time to the training program, followed by at least 2 years of successful specialty practice.

(b) The training may consist of 3 years of full-time assistantship to a certified specialist approved by this Board, and by the approving agencies of the American Osteopathic Association, in both hospital and office practice, followed by at least 2 years of successful specialty practice.

(c) The training may consist of an approved hospital residency in the specialty of not less than 2 years' time, followed by 2 years' assistantship to a certified specialist approved by this Board and 2 years of successful specialty practice.

It shall be this Board's duty to assist applicants in determining a suitable program of special training, but it is not this Board's function to supply the training. This Board will recognize as proper institutions for securing this training those institutions which are approved for special training by the approving agencies of the American Osteopathic Association, together with such others as this Board may determine to possess facilities and personnel adequate to provide proper training.

(g) He shall provide notarized documentary evidence that he has performed 100 major surgical operations in which he was the responsible surgeon.

(h) He shall present detailed case records acceptable to the American Osteopathic Board of Ophthalmology and Otorhinolaryngology of twenty-five major procedures in which he

was the responsible surgeon, and handled within the past 5 years. These records shall include history, physical examination, routine laboratory work, special laboratory work, preoperative diagnosis, detailed findings, detailed operative procedure, postoperative diagnosis, the progress notes, gross and histological description and diagnosis of excised tissue, and a case summary.

(i) An applicant for certification by this Board who graduated prior to 1936, and who was engaged in the practice of his specialty by 1939 or prior thereto, and who meets the general requirements stated in Section 1, (a), (b), (c), and (d), and who has maintained appropriate activity in American Osteopathic Association organizational work, specialty societies, hospital staff work, the pursuit of periodic postgraduate work, contributions to professional literature, or otherwise has indicated his consistent interest and competence in his specialty, the requirements of this article Section 1, paragraphs (f) and (h) may be waived, and he may be recommended for certification after passing an appropriate oral and/or clinical examination.

(j) As a primary prerequisite for certification in a specialty under the jurisdiction of this Board, the applicant must show evidence of a well-developed understanding of the osteopathic principles and a demonstrated ability to apply these principles.

AMERICAN OSTEOPATHIC BOARD OF PATHOLOGY

Robert P. Morhardt, Chairman, South Pasadena, Calif.

Dorsey A. Hoskins, Vice Chairman, Kansas City, Mo.

Otterbein Dressler, Detroit

O. Edwin Owen, Philadelphia

Grover C. Stukey, Kirksville, Mo.

Norman W. Arends, Secretary-Treasurer, Huntington Woods, Mich.

DEFINITION OF SPECIALTY PRACTICE

Sec. 1. For the purpose of the operation of this Board the following divisions of practice are defined:

(a) The practice of clinical pathology shall consist of and include all phases of general clinical laboratory work, hematology, bacteriology, mycology, parasitology, serology, toxicology, and applied biochemistry.

(b) The practice of pathology shall consist of and include surgical pathology, autopsy surgery, histopathology and clinical pathology.

REQUIREMENTS FOR CERTIFICATION

Each applicant for examination for certification in clinical pathology or pathology, or any specialty coming under the jurisdiction of the American Osteopathic Board of Pathology, must present evidence that he has met the following minimum requirements.

a. Educational qualifications

1) An applicant must be a graduate of an osteopathic college approved by the American Osteopathic Association.

2) Internship

a) One year of internship, preferably a rotating internship, in a hospital approved for intern training by the American Osteopathic Association, or under exceptional circumstances other equivalent institutional training for a period of 1 year satisfactory to this Board.

b) An internship of 9 months shall constitute a recognized full internship if served during World War II as prescribed by the Selective Service Board and when such internships were recognized by the American Osteopathic Association as full internships.

c) If graduated in 1942 or prior thereto, the applicant must have had experience and/or training equivalent to that of an acceptable internship, as determined by this Board.

3) Special training

a) Pathology

A period of not less than 3 years of special training is required, after the required 1 year of internship or its equivalent as defined above (a, 2), but not necessarily immediately following the internship nor running 3 consecutive years.

b) Clinical pathology

A period of not less than 3 years of special training is required, after the required 1 year of internship or its equivalent as defined above (a, 2), but not necessarily immediately following the internship nor running 3 consecutive years.

c) Institutions approved for special training

(1) This Board shall accept special training in pathology or clinical pathology in institutions which meet the Board's requirements and are approved for the specific special training by the approving agencies of the American Osteopathic Association.

(2) This Board requires that the laboratory be under the personal direction of a specialist in pathology (or for clinical pathology, a specialist in clinical pathology) recognized by this Board as capable of proper and thorough teaching of the trainee. He need not be certified but certification in the specialty is preferable.

(3) The laboratory, to be satisfactory, must have an annual minimal volume as follows:

2,000 determinations in hematology;
1,000 determinations in blood chemistry;
1,500 determinations in bacteriology, mycology, parasitology, and serology;
2,000 determinations in urinalyses, basal metabolism tests, electrocardiographs, gastric analyses, etc., and general miscellaneous laboratory work.

In addition, for pathology, the following minimal volume is required:

1,000 surgical-case tissues;
Postmortem examination of 35 per cent of the deaths in the hospital. A postmortem examination constitutes at least a thorough examination of the trunk in selected cases, additional explorations of the head, extremities, spinal cord, etc.

(4) The laboratory must have an adequate library in the specialty and in related sciences and fields of practice available to the trainee.

(5) The approval of the laboratory is on an annual basis.

(6) If a laboratory loses its status of approval, a trainee in that laboratory shall be given credit for the time spent in special training only during its period of approval.

d) Programs of special training

(1) The special training program must meet the minimum requirements established by the American Osteopathic Board of Pathology.

(2) The special training program must be approved by the Bureau of Hospitals if the trainee is classified as serving a residency.

(3) The special training program must be approved by the Committee on Accreditation of Postgraduate Training of the Bureau of Professional Education and Colleges if it is other than a residency. This program may be:

i) Fellowships: a graduate training program of a recognized college of osteopathy,

ii) Preceptorships: training programs of a qualified individual,

iii) Miscellaneous: other recognized postgraduate courses given by clinics, colleges, etc.

(4) Residency training, fellowship training, etc., may not be carried out simultaneously in the same laboratory.

(5) The program must meet the requirements to thoroughly train the individual in clinical pathology and/or pathology in all of the branches as defined in 1, a), b), above.

(6) This Board requires the following minimum requirements for approval of a program:

(a) Pathology

This special training shall include:

1. One year's clinical pathology training subdivided as follows:
   i) 3 months' hematology service;
   ii) 3 months' blood chemistry service;
   iii) 3 months' bacteriology, mycology, parasitology, and serology service;
   iv) 3 months' urinalyses and miscellaneous tests and general laboratory work service.
2. Two years' tissue pathology and autopsy surgery

(b) Clinical pathology

This special training shall include:

1. One year's service embracing the four divisions as stated above in (6), (a), 1;
2. Two years in the laboratory.

(c) A year is defined as 50 weeks of a minimum of 40 hours per week.

(d) Attendance at periodic clinicopathologic seminars and/or submission of original theses, the number and character to be determined by the trainer.

e) Status of the trainee

(1) A resident training program comes under the jurisdiction of the Bureau of Hospitals of the American Osteopathic Association. It is defined as a full-time training period appropriate to the specialty and of not less than 1 year's duration spent in an approved osteopathic hospital.

(2) Fellowship training programs come under the jurisdiction of the Committee on Accreditation of Postgraduate Training of the Bureau of Professional Education and Colleges.

(3) An individual may train as a resident or as a Fellow as long as the requirements of the special training program are fulfilled in an institution approved for the special training. Furthermore, a combination of both types may be served if desired or necessary to secure adequate training and may be served in more than one approved laboratory and under more than one qualified specialist.

(4) The trainee must register with this Board within 30 days from the time he begins the special training in his specialty. Forms for registration are available from the Secretary-Treasurer of this Board.

f) Modifications of requirements

The requirements of Article IV, Section 1, f) and h) of the Bylaws may be waived and the applicant recommended for certification after passing an appropriate oral and/or clinical examination, if the applicant was engaged in the practice of his specialty by 1939, or prior thereto, and who graduated prior to 1936, and who meets the general requirements as follows:

(1) He must be a graduate of an approved osteopathic college.

(2) He must be licensed to practice in the state or territory where he conducts his specialty practice.

(3) He must have been a member in good standing of the American Osteopathic Association and of his state or divisional society for a continuous period of at least 3 years immediately prior to application for examination.

(4) He must have satisfactorily completed an internship of at least 1 year in a hospital approved for intern training by the American Osteopathic Association or satisfactory to this Board. If graduated in 1942 or prior thereto, the applicant must have had training of value equivalent to that of an acceptable internship as determined by this Board.

(5) He must be able to show evidence of conformity to the standards set in the Code of Ethics of the American Osteopathic Association.

(6) He must have maintained appropriate activity in American Osteopathic Association organizational work, specialty societies, hospital staff work, the pursuit of periodic postgraduate work, contributions to professional literature or otherwise have indicated his consistent interest and competence in his specialty.

g) Modification of requirements by previous commitments by this Board.

In the case of applicants to whom this Board has made definite commitments that a particular program which commenced prior to December 15, 1946, would meet the requirements for admission to examination for certification, the Board may waive such requirements of Article IV, Section 1, paragraphs d), f), and g) of the Bylaws as would prevent the admission of such applicants to examination. The requirements of the Bylaws in force at the time the commitments were made shall apply.

h) Modification of requirements for those who have engaged in specialty practice of pathology or clinical pathology.

If the applicant graduated prior to 1946, this Board may modify the specific requirement of special training by allowing a credit of 1 year of special training for each 5 years of specialty practice for total credit of not to exceed 2 years of the requirement. In no case may such applicant be accepted for examination without at least 1 year of special training as defined.

b. Years of specialty practice

In addition to completing the required special training, the applicant shall have engaged in specialty practice in his field for not less than 2 years before admission to the examination. Specialty practice is defined as a mimimum of 90 per cent of the time occupied in professional practice in the specialty, which may include active specialty practice, teaching of pathology, or administration of a department of pathology or research. An affidavit in regard to the above may be required by the Credentials Committee of this Board in evaluating the applicant's application.

c. Membership requirements

The applicant must have been a member in good standing of the American Osteopathic Association and of his state or divisional society for a continuous period of at least 3 years immediately prior to application for examination by this Board.

d. Licensure requirement

He must be licensed to practice in the state or territory where he conducts his specialty practice.

e. Code of Ethics requirement

He must be able to show evidence of conformity to the standards set in the Code of Ethics of the American Osteopathic Association.

f. Following satisfactory compliance with the prescribed requirements as to special training and specialty practice, the applicant shall be required to pass appropriate examinations planned to evaluate his understanding of the scientific bases of the problems involved in the specialty, and his familiarity with the current advances in the specialty, and the possession of sound judgment and of a high degree of skill in the diagnostic and therapeutic procedures involved in the practice of the specialty. Oral, written, and clinical examinations shall be conducted and required in the case of each applicant. This Board may conduct the oral and written examinations at the end of the required 3 years of special training, but shall not conduct the practical or clinical examination until the required 2 years of specialty practice have been completed. The members of this Board shall personally review, if not perform, the grading of each written examination. The conduct of the clinical examinations may be delegated to committees of not fewer than two individuals maturely qualified in the specialty. A full description of the method of conducting the examinations shall be formulated in this Board's Regulations and Requirements, and provision for re-examination shall be made.

AMERICAN OSTEOPATHIC BOARD OF PEDIATRICS

William S. Spaeth, Chairman, Philadelphia
Mary E. Golden, Vice Chairman, Des Moines, Iowa
Ruth E. Tinley, Philadelphia
H. Mayer Dubin, Downey, Calif.
Evangeline N. Percival, Secretary-Treasurer, Los Angeles

DEFINITION OF SPECIALTY PRACTICE

The practice of pediatrics shall consist of and include the utilization of all of those procedures necessary to the study and the management of the care of infants and children, as well as the prevention, diagnosis, and treatment of the diseases of infants and children from birth up to the average age of sexual maturity.

REQUIREMENTS FOR CERTIFICATION

Each applicant for certification under the jurisdiction of this Board must present evidence that he has met the following minimum requirements:

1. He shall have been graduated from an approved osteopathic college at least 6 years prior to consideration of his

application by the American Osteopathic Board of Pediatrics.

2. He must be licensed to practice in the state or territory where he conducts his specialty practice.

3. He must have been a member in good standing of the American Osteopathic Association and of his state or divisional society for a continuous period of at least 3 years immediately prior to making application for examination by this Board.

4. He shall be, and if certified continue to be, favorably known and recognized in his community and by his clientele as an osteopathic physician who is specializing in the practice of pediatrics and shall publicize his osteopathic affiliation in an ethical manner.

5. He must be able to show evidence of conformance to the standards set in the Code of Ethics of the American Osteopathic Association.

6. He shall have satisfactorily completed an internship of at least 1 year in a hospital approved for intern training by the American Osteopathic Association or other equivalent institutional training satisfactory to this Board. If the applicant was graduated in 1942 or prior thereto, he must have had training of value equivalent to that of an acceptable internship as determined by this Board.

7. He shall provide notarized documentary evidence of at least 3 years of special training related to the specialty after the required 1 year of internship or its equivalent, but not necessarily immediately following the internship nor running 3 consecutive years. In the case of applicants graduated prior to 1946, the Board may modify the requirements of 3 years of special training by allowing a credit of 1 year of special training for each 5 years of specialty practice for a total credit not to exceed 2 years of the requirement. In no case may such applicant graduated prior to 1946 be accepted for examination without at least 1 year of special training as defined. This training shall include:

(a) Advanced studies in the sciences: Anatomy, physiology, biochemistry, pathology, pharmacology, bacteriology, immunology, parasitology, and such other basic sciences as are necessary to a mature and comprehensive understanding of the prevention, diagnosis, therapy, and management of the disorders involved in the specialty.

(b) Active experience in such amount and diversity in the practice of this specialty that it will assure adequate training in the specialty. The special training may be provided in colleges, laboratories, clinics, hospitals, or other facilities satisfactory to this Board, or by serving an acceptable assistantship to or studying under the preceptorship of a qualified specialist in this field, supplemented by prescribed study conforming to a plan approved by this Board. The minimum 3-year period of special training may be made up of varying combinations of the several types mentioned above as determined by this Board. It shall be this Board's duty to assist applicants in determining a suitable program of special training, but it is not this Board's function to supply the training. This Board will recognize as proper institutions for securing the special training those institutions which are approved by the approving agencies of the American Osteopathic Association together with such others as this Board may determine to possess facilities and personnel adequate to provide proper training.

8. Subsequent to completing the required special training, the applicant shall have engaged in specialty practice for not less than 2 years before admission to examination. To be considered as engaging in a specialty practice, the applicant shall devote 60 per cent or more of his time to the practice of pediatrics.

9. Following satisfactory compliance with the prescribed requirements as to special training and specialty practice, the applicant shall be required to pass appropriate examinations planned to evaluate his understanding of the scientific bases of the problems involved in this specialty, his familiarity with the current advances in the specialty field, and the possession of sound judgment and of a high degree of skill in the diagnostic and therapeutic procedures involved in the practice of the specialty. Oral, written, and clinical examinations shall be conducted and required in the case of each applicant.

10. In the case of any applicant who was engaged in the practice of his specialty by 1939 or prior thereto and who graduated prior to 1936, and who meets the general requirements as stated in Article IV, Section 1, (a), (b), (c), (d), and (e) of the Bylaws, and has maintained appropriate activity in American Osteopathic Association organizational work, specialty societies, hospital staff work, the pursuit of periodic postgraduate work, contributions to professional literature, or otherwise has indicated his consistent interest and competence in his specialty, the requirements of Article IV, Section 1, (f) and (h) of the Bylaws may be waived, and he may be recommended for certification after passing an appropriate oral and/or clinical examination.

11. Each applicant for certification coming within the jurisdiction of this Board shall prepare and submit for publication at least three articles on pediatrics during the 3 years of special training and one article in each of the 2 years of specialty practice and shall forward copies of these articles to the Secretary-Treasurer of the American Osteopathic Board of Pediatrics.

AMERICAN OSTEOPATHIC BOARD OF PHYSICAL MEDICINE AND REHABILITATION

William W. W. Pritchard, Chairman, Pasadena, Calif.
Wallace M. Pearson, Vice Chairman, Kirksville, Mo.
Robert C. Ruenitz, Secretary-Treasurer, Los Angeles

DEFINITION OF SPECIALTY PRACTICE

The practice of physical medicine and rehabilitation shall consist of and include the use of all medical measures, especially those in the physical field, which will hasten the recovery and restoration of the ill or handicapped to the fullest physical, mental, social, vocational, and economic usefulness of which he or she is capable.

REQUIREMENTS FOR CERTIFICATION

To be eligible to receive a certificate of specialization from this Board, the applicant must meet all of the following minimum requirements, excepting as provided in Article IV, Section 2 of the Bylaws of this Board:

a. He must be a graduate of an approved osteopathic college.

b. He must be licensed to practice in the state or territory where he conducts his specialty practice.

c. He must have been a member in good standing of the American Osteopathic Association and of his state or divisional society for a continuous period of at least 3 years prior to application for examination by this Board.

d. He must have satisfactorily completed an internship of at least 1 year in a hospital approved for intern training by the American Osteopathic Association or satisfactory to this Board. If graduated in 1942 or prior thereto, the applicant must have had training of value equivalent to that of an acceptable internship as determined by this Board.

e. He must practice as a specialist in his field for a period of at least 2 years subsequent to the minimum 3 years of special training.

f. Percentage of practice in the field covered by this specialty shall not be less than 60 per cent. An affidavit of proof of practice may be required by this Board from the applicant.

g. Number of case records

1. The applicant must present evidence of handling on his own responsibility not less than 200 cases applicable to this specialty. This evidence must include: history, structural examinations, general physical examination, record of special muscle and nerve testings where applicable, treatment prescribed, and progress notes of the case, including termination of treatment or at the latest date patient was observed.

2. Documentary evidence of the above may be requested by this Board.

3. These records become the property of this Board and shall be placed on file with the Secretary-Treasurer for a minimum of 3 years.

h. Thesis

1. The applicant shall submit reprints or copies of representative articles which have been published or have been prepared for publication. The thesis, a monograph, shall be an original investigation in the specialty field as conducted by the

applicant or a review of the literature to which the applicant shall add personal experiences referable to the subject matter.

2. This Board shall submit to the applicant three titles as suggestions for the monograph. If these are not acceptable to the applicant, the applicant may submit a title of his choice to the Board for approval.

3. The title of the thesis must be approved by this Board and the title shall be recorded in the office of the Secretary-Treasurer.

4. The form of the thesis shall follow a stylebook of the applicant's choosing. The author and title of the stylebook shall be included in the bibliography.

5. Sufficient copies shall be submitted to the Secretary-Treasurer of this Board to permit distribution of the thesis to the members of the Examination Committee.

i. Training

A period of not less than 3 years of special training related to the specialty shall be required, after the required 1 year of internship or its equivalent, but need not immediately follow the internship, nor run 3 years consecutively. In the case of applicants who graduated prior to 1946, this Board may modify the requirements of 3 years' special training by allowing a credit of 1 year of special training for each 5 years of specialty practice for a total credit of not to exceed 2 years of the requirement, but in no case may such an applicant graduated prior to 1946 be accepted for examination without at least 1 year of special training.

This training shall include:

1. Advanced study in the sciences: Anatomy, physics, physiology, biochemistry, pathology, pharmacology, and such other basic sciences as may be required by this Board.

2. Active experience in the diagnosis and treatment in such amount and diversity that it will assure adequate training in the specialty.

3. The clinical aspects of physical medicine:

a. Thermotherapy

Clinical applications of heat and cold, both local and general.

b. Hydrotherapy

Methods of employing hydrotherapeutic devices and procedures.

c. Electrotherapy

Clinical, diagnostic, and therapeutic uses of the constant current, interrupted current, sinusoidal current, and high frequency current.

d. Radiation therapy

Diagnostic and therapeutic uses of ultra-violet and infra-red radiation. (Therapeutic applications of roentgen rays and atomic radiation are not included in the field of physical medicine and rehabilitation.)

e. Kinesitherapy

Clinical uses in diagnosis and treatment by exercise.

f. Occupational therapy

Indications for and clinical applications of the various types.

g. Rehabilitation

The diagnostic and therapeutic use of convalescent reconditioning and rehabilitation of the seriously disabled person.

The special training may be provided in colleges, laboratories, clinics, hospitals, or other facilities satisfactory to this Board, or by serving an acceptable assistantship to or studying under the preceptorship of a qualified specialist in this field, supplemented by prescribed study conforming to a plan approved by this Board.

The minimum 3-year period of special training may be made up of varying combinations of several types mentioned above, as determined by this Board.

It shall be this Board's duty to assist applicants in determining a suitable program of special training, but it is not this Board's function to supply the training.

This Board will recognize as proper institutions for securing this training those institutions which are approved for special training by the approving agencies of the American Osteopathic Association, and such others as this Board may determine to possess facilities and personnel adequate to provide proper training.

j. Modification of Requirements

In the case of any applicant who was engaged in the practice of his specialty by 1939 or prior thereto, and who graduated prior to 1936, and who meets the general requirements stated in Article IV, Section 1, (a), (b), (c), (d), and (e) of the Bylaws of this Board, and has maintained appropriate activity in American Osteopathic Association organizational work, specialty societies, hospital staff work, the pursuit of periodic postgraduate work, contributions to professional literature or otherwise has indicated his consistent interest and competence in his specialty field, the requirements of Article IV, Section 1, paragraphs (f) and (h) of the Bylaws of this Board may be waived and he may be recommended for certification after passing an appropriate oral and/or clinical examination.

k. Following satisfactory compliance with the prescribed requirements as to special training and specialty practice, the applicant shall be required to pass appropriate examinations planned to evaluate his understanding of the scientific bases of the problems involved in the specialty, his familiarity with the current advances in the specialty, and the possession of sound judgment and of a high degree of skill in the diagnostic and therapeutic procedures involved in the practice of the specialty. Oral, written, and clinical examinations shall be conducted and required in the case of each applicant. This Board may conduct the oral and written examinations at the end of the required 3 years of special training, but shall not conduct the practical or clinical examination until the required 2 years of specialty practice have been completed. The members of this Board shall personally review, if not perform, the grading of each written examination. The conduct of the clinical examinations may be delegated to committees of not fewer than two individuals maturely qualified in the specialty. A full description of the method of conducting the examination shall be formulated in this Board's Regulations and Requirements, and provision for re-examination shall be made.

AMERICAN OSTEOPATHIC BOARD OF PROCTOLOGY

Carl S. Stillman, Jr., Chairman, San Diego, Calif.
John W. Orman, Vice Chairman, Tulsa, Okla.
George R. Norton, Fort Lauderdale, Fla.
Frank D. Stanton, Boston
Carlton M. Noll, Secretary-Treasurer, Evergreen, Colo.

DEFINITION OF SPECIALTY PRACTICE

For the purpose of clarification the following division of specialty practice is defined:

a. The practice of proctology shall consist of and include the treatment of diseases and conditions originating within or affecting the anus, rectum, perianal and perirectal areas, and related or complicating conditions not including the use of major surgery.

REQUIREMENTS FOR CERTIFICATION

To be eligible to receive a certificate of specialization from the American Osteopathic Board of Proctology, the applicant must meet all of the following minimum requirements except as provided in Article IV, Section 2, of the Bylaws of the American Osteopathic Board of Proctology.

a. He must have been graduated from an approved osteopathic college at least 5 years prior to application.

b. He must be licensed to practice in the state or territory where he conducts his specialty practice.

c. He must have been a member in good standing of the American Osteopathic Association and of his state or divisional society for a continuous period of at least 3 years immediately prior to application for examination by this Board.

d. He must have satisfactorily completed an internship of at least 1 year in a hospital approved for intern training by the American Osteopathic Association or other equivalent institutional training satisfactory to this Board. If graduated in 1942 or prior thereto, the applicant must have had training of value

equivalent to that of an acceptable internship as determined by this Board.

e. He shall be, and if certified continue to be, favorably known and recognized in his community and by his clientele as an osteopathic physician who is specializing in the practice of proctology and shall publicize his osteopathic affiliation in an ethical manner.

f. He must be able to show evidence of conformity to the standards set in the Code of Ethics of the American Osteopathic Association.

g. A period of not less than 3 years of special training related to the specialty shall be required, after the required 1 year of internship, or its equivalent, but not necessarily immediately following the internship nor running 3 consecutive years, except that in the case of applicants who graduated prior to 1946, the Board may allow the requirement of 3 years of special training by allowing a credit of 1 year of special training for each 5 years of specialty practice for a total credit of not to exceed 2 years of the requirement, but in no case may an applicant graduated prior to 1946 be accepted for examination without at least 1 year of special training as defined. This training shall include:

(i) Advanced study in the sciences: Anatomy, physiology, biochemistry, pathology, pharmacology, and such other basic sciences as are necessary to a mature and comprehensive understanding of the prevention, diagnosis, therapy, and management of the disorders involved in the specialty.

The minimum requirement in the basic sciences shall be 100 clock hours subdivided as follows:

Anatomy 10 hours; physiology 10 hours; biochemistry 10 hours; pathology 10 hours; pharmacology 10 hours; bacteriology and parasitology 10 hours.

The balance of 40 hours shall include such other basic sciences as this Board may require from time to time.

(ii) Active experience in diagnosis and treatment in such amount and diversity that it will assure adequate training in the specialty.

h. He must practice as a specialist in his field for a period of at least 2 years subsequent to the minimum 3 years of special training.

i. Training Requirements:

(1) Active experience in the diagnosis and treatment in such amount and diversity that it will assure adequate training in the specialty. The special training may be provided in colleges, laboratories, clinics, hospitals, or other facilities satisfactory to this Board, or by serving an acceptable assistantship to or studying under the preceptorship of a qualified specialist in this field, supplemented by prescribed study conforming to a plan approved by this Board.

The minimum 3-year period of special training may be made up of varying combinations of several types mentioned above, as determined by this Board. It shall be this Board's duty to assist applicants in determining a suitable program of special training, but it is not this Board's function to supply the training. This Board will recognize as proper institutions for securing this training those institutions which are approved for special training by the approving agencies of the American Osteopathic Association, together with such others as this Board may determine to possess facilities and personnel adequate to provide proper training.

j. Following satisfactory compliance with the prescribed requirements as to special training and specialty practice, the applicant shall be required to pass appropriate examinations planned to evaluate his understanding of the scientific bases of the problems involved in the specialty, his familiarity with the current advances in the specialty, and the possession of sound judgment and a high degree of skill in the diagnostic and therapeutic procedures involved in the practice of the specialty. Oral, written, and clinical examinations shall be conducted and required in the case of each applicant. This Board of specialty certification may conduct its oral and written examinations at the end of the required 3 years of special training, but shall not conduct the practical or clinical examination until the required 2 years of specialty practice have been completed. The members of this Board shall personally review, if not perform, the grading of each written examination. The conduct of the clinical examinations may be delegated to committees of not fewer than two individuals maturely qualified in the specialty.

k. In the case of any applicant who has engaged in the practice of his specialty by 1939, or prior thereto, and who graduated prior to 1936, and who meets the general requirements stated in Section 1, (a), (b), (c), (d), and (e) of the Bylaws of this Board, and has maintained appropriate activity in American Osteopathic Association organizational work, specialty societies, hospital staff work, the pursuit of periodic postgraduate work, contributions to professional literature, or otherwise has indicated his consistent interest and competence in his specialty, the requirements of Article IV, paragraphs (f) and (h) of the Bylaws of this Board may be waived and he may be recommended for certification after passing an appropriate oral and/or clinical examination.

l. Affidavit:

The applicant shall file with the Secretary-Treasurer of this Board an affidavit in duplicate stating the percentage of his practice that was proctologic in character during the preceding 12-month period, based on the number of patients seen. An applicant must have a minimum of 75 per cent proctologic specialty practice to be eligible for examination.

m. Case Records:

The applicant must file with the Secretary-Treasurer of this Board true and authentic copies of 200 case records of proctologic cases he has cared for within the 4-year interval preceding the filing of his application. The applicant must file an affidavit in duplicate certifying that the records are exact copies of true and authentic records in his files and that he personally cared for the cases represented. The case records and affidavit must reach the Secretary-Treasurer of this Board not later than April 15th for the applicant to be eligible for examination at the following annual meeting of this Board. All records become the property of this Board and are not returnable to the applicant.

n. Scientific Article:

The applicant must file with the Secretary-Treasurer of this Board by April 15th of the year he desires examination, a 1,000-word article on a proctologic subject of his choosing or at the dictates of this Board. This Board may accept a previously published article on a proctologic subject. Grading of this scientific article will be based on English composition and neatness as well as upon the subject matter. Scientific articles must follow the standard in common use for composition in such articles.

AMERICAN OSTEOPATHIC BOARD OF RADIOLOGY

William L. Tanenbaum, Chairman, Detroit
Burwell S. Keyes, Vice Chairman, Los Angeles
Clyde C. Henry, Denver
Paul T. Lloyd, Philadelphia
George W. Rea, Kirksville, Mo.
D. W. Hendrickson, Secretary-Treasurer, Wichita, Kans.

DEFINITION OF SPECIALTY PRACTICE

For the purposes of clarification the following definitions of the divisions of the special fields in radiology are given:

a. The practice of diagnostic roentgenology shall consist of and be confined to the performance and interpretation of diagnostic roentgenological procedures.

b. The practice of roentgenology shall consist of and be limited to the performance and interpretation of diagnostic roentgenological procedures and the use of roentgen rays in therapy.

c. The practice of radiation therapy shall consist of treatment of human disease by the use of roentgen rays, radium, and artificial radioactive substances.

d. The practice of radiology shall consist of and include the performance and interpretation of diagnostic roentgenological procedures and the diagnosis and treatment of human disease by the use of roentgen rays, radium, and artificial radioactive substances.

REQUIREMENTS FOR CERTIFICATION

The American Osteopathic Board of Radiology will accept for certification only osteopathic physicians who are specializing in one of the divisions of radiology coming under the jurisdiction of this Board. The proportion of specialization in practice which is acceptable to the Board may vary according to the size of the community and the conditions under which the applicant practices. The applicant must be engaged in the practice of one of the divisions of radiology coming under the jurisdiction of this Board, i.e., diagnostic roentgenology, roentgenology, radiology, or radiation therapy, and he must present evidence satisfactory to the Board that he is so practicing.

Each applicant for certification under this Board must present evidence that he has met the following minimum requirements:

1. He shall have been graduated from an approved osteopathic college at least 5 years prior to consideration of his application by this Board.

2. He must have been a member in good standing of the American Osteopathic Association and of his state or divisional society for a continuous period of at least 3 years immediately prior to making application for examination by this Board.

3. He shall be, and if certified continue to be, favorably known and recognized in his community and by his clientele as an osteopathic physician who is specializing in the practice of one of the divisions of radiology coming under the jurisdiction of this Board and shall publicize his osteopathic affiliations in an ethical manner.

4. He must have satisfactorily completed an internship of at least 1 year in a hospital approved for intern training by the American Osteopathic Association or satisfactory to this Board. If graduated in 1942 or prior thereto, the applicant must have had training of value equivalent to that of an acceptable internship as determined by this Board. The intern year of 9 months as prescribed by the Selective Service Board during World War II shall be acceptable as fulfilling this requirement.

5. He must be licensed to practice in the state or territory where he conducts his specialty practice.

6. He must be able to show evidence of conformity to the standards set in the Code of Ethics of the American Osteopathic Association.

7. He shall provide documentary evidence of at least 3 years of special training related to the specialty for which he is seeking certification, after the required 1 year of internship, or its equivalent, but not necessarily running 3 consecutive years. This Board may modify the requirement of 3 years' special training by allowing a credit of 1 year of special training for each 5 years of specialty practice for a total credit not to exceed 2 years of the requirement, for physicians who graduated prior to 1946, but in no case may such applicant be accepted for examination without at least 1 year of special training as defined. This training shall include:

(a) Advanced study in the sciences: Anatomy, physiology, biochemistry, pathology, pharmacology, and such other basic sciences as are necessary to a mature and comprehensive understanding of the prevention, diagnosis, therapy, and management of the disorders involved in the specialty.

(b) Active experience in such amount and diversity that it will assure adequate training in the specialty.

The special training may be provided in colleges, laboratories, clinics, hospitals, or other facilities satisfactory to this Board, or by serving an acceptable assistantship to or studying under the preceptorship of a qualified specialist in this field, supplemented by prescribed study conforming to a plan approved by this Board.

The minimum 3-year period of special training may be made up of varying combinations of the several types mentioned above, as determined by this Board. It shall be this Board's duty to assist applicants in determining a suitable program of special training, but it is not this Board's function to supply the training. This Board will recognize as proper institutions for securing this training those institutions which are approved for special training by the approving agencies of the American Osteopathic Association, together with such others as this Board may determine to possess facilities and personnel adequate to provide proper training.

8. In addition to completing the required special training, the applicant shall have engaged in specialty practice in his field for not less than 2 years before admission to examination.

9. Following satisfactory compliance with the prescribed requirements as to special training and specialty practice, the applicant shall be required to pass appropriate examinations planned to evaluate his understanding of the scientific bases of the problems involved in the specialty, his familiarity with the current advances in the specialty, and the possession of sound judgment and of a high degree of skill in the diagnostic and therapeutic procedures involved in the practice of the specialty. Oral, written, and clinical examinations shall be conducted and required in the case of each applicant. This Board may conduct the oral and written examinations at the end of the required 3 years of special training, but shall not conduct the practical or clinical examination until the required 2 years of specialty practice have been completed. The members of this Board shall personally review, if not perform, the grading of each written examination. The conduct of the clinical examinations may be delegated to committees of not fewer than two individuals maturely qualified in the specialty. A full description of the method of conducting the examination shall be formulated in this Board's Regulations and Requirements, and provision for re-examination shall be made.

10. In the case of any applicant who was engaged in the practice of his specialty by 1939, or prior thereto, and who graduated prior to 1936, and who meets the general requirements as stated above, and has maintained appropriate activity in American Osteopathic Association organizational work, specialty societies, hospital staff work, the pursuit of periodic postgraduate work, contributions to professional literature, or otherwise has indicated his consistent interest and competence in his specialty, the requirements of Article IV, Section 1, paragraphs (f) and (h) of the Bylaws may be waived and he may be recommended for certification after passing appropriate oral and/or written clinical examinations.

11. Applicants for certification in any of the divisions of radiology shall prepare a thesis upon some phase of radiology as a part of the written examination for certification.

AMERICAN OSTEOPATHIC BOARD OF SURGERY

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DEFINITION OF SPECIALTY PRACTICE

For the purpose of clarification the following divisions of specialty practice coming under the jurisdiction of the American Osteopathic Board of Surgery are defined.

1. The practice of surgery shall consist of and include that branch of medical science, art, and practice which is concerned with the correction of deformities and defects, the repair of injuries, the diagnosis and care of disease, the relief of suffering, and the prolongation of life by manual and instrumental means.

2. The practice of gynecological surgery shall consist of and include that branch of medical science, art, and practice which is concerned with major operative procedures upon the female generative system or structures related thereto within the lower abdomen and pelvis, and major plastic procedures upon the vaginal tract by manual and instrumental means.

3. The practice of neurosurgery shall consist of and include that branch of medical science, art, and practice which is concerned with the correction of deformities and defects, the repair of injuries, and the diagnosis and care of diseases of the nervous system by manual and instrumental means.

4. The practice of orthopedic surgery shall consist of and include that branch of medical science, art, and practice which is concerned with the correction of deformities and defects of the bony skeleton and associated structures, the repair of injuries to the bones and joints, and the diagnosis and care of diseases of the bones and joints by manual and instrumental means.

5. The practice of peripheral vascular surgery shall consist of and include that branch of medical science, art, and practice which is concerned with the correction of deformities and defects of the peripheral vessels, the repair of injuries to the peripheral vessels, and the diagnosis and care of peripheral vascular diseases by manual and instrumental means.

6. The practice of plastic surgery shall consist of and include that branch of medical science, art, and practice which is concerned with the repair of injuries and the correction of defects and deformities to the integument, muscles, and the bony skeleton and associated structures of the body by manual and instrumental means.

7. The practice of urological surgery shall consist of and include that branch of medical science, art, and practice which is concerned with the correction of deformities and defects, the repair of injuries, and the diagnosis and care of diseases of the urogenital organs by manual and instrumental means.

8. The practice of anesthesiology shall consist of and include that branch of medical science, art, and practice which deals with the use of anesthetic agents, the evaluation of the patient's condition with reference to the use of anesthetic agents, and the care of complications incident to their use.

BASIC REQUIREMENTS FOR CERTIFICATION

The American Osteopathic Board of Surgery shall accept for examination for certification only osteopathic physicians who are specializing in one of the specialty fields coming under the jurisdiction of this Board. The proportion of specialization in practice which is acceptable to this Board may vary according to the size of the community and the conditions under which the applicant practices.

The applicant must be engaged in the practice of surgery or one of the specialty fields coming under the jurisdiction of this Board, i.e., neurosurgery, gynecological surgery, orthopedic surgery, peripheral vascular surgery, plastic surgery, urological surgery, or anesthesiology and he must present evidence to this Board that he is so practicing.

It shall be the policy of the American Osteopathic Board of Surgery to require each applicant to submit a list of his surgical operative procedures (or anesthetic procedures) for the 12-month period immediately prior to making application, naming the type of operation, the hospital in which the operation was performed, the patient's initials, the hospital case number, the pathologist's report, and the case termination.

This list shall be certified by the administrator of the hospital in which the surgeries were performed and shall be accompanied by a supplementary list in which the operative procedures for the year are broken down into segregated totals indicating the number of each type of operative procedure performed by the applicant during the 12-month period. The totals of both lists must agree.

It shall be the policy of this Board to require the Credentials Committee to carefully scrutinize the scope of surgical or anesthetic practice represented in each applicant's report. Unless an applicant presents evidence that the scope of his specialty practice is sufficiently varied and of a major character (as shown by his hospital records) the Credentials Committee shall not recommend him for examination without an examination by one or more certified specialists not located in the applicant's immediate vicinity who have been appointed by this Board for the purpose of determining the applicant's qualifications.

It shall be the policy of this Board to admit to examination only those surgeons or anesthetists who qualify as recognized specialists in their respective fields in the community in which they conduct their specialty practice.

Each applicant for examination for certification in surgery or one of the surgical specialty fields coming under the jurisdiction of the American Osteopathic Board of Surgery must present evidence that he has met the following minimum requirements:

1. He shall have graduated from an approved osteopathic college at least 7 years prior to consideration of his application by this Board.

2. He shall be licensed to practice in the state or territory where he conducts his specialty practice.

3. He shall have been a member in good standing of the American Osteopathic Association and of his state or divisional society for a continuous period of at least 3 years immediately prior to making application for examination by this Board.

4. He shall be, and if certified continue to be, favorably known and recognized by his clientele as an osteopathic physician who is specializing in the practice of surgery or a surgical specialty coming under the jurisdiction of this Board and shall publicize his osteopathic affiliations in an ethical manner.

5. He shall be able to show evidence of conformity to the standards set in the Code of Ethics of the American Osteopathic Association.

6. He shall have had an internship of at least 1 year in a hospital acceptable to this Board. The intern year of 9 months as prescribed by the Selective Service Board during World War II shall be acceptable. For physicians who graduated in 1942 or prior thereto this Board may accept other qualifications in lieu of internship where the applicant's surgical experience and ability are beyond question.

7. He shall provide notarized documentary evidence of a minimum of 3 years of formal training subsequent to his internship. This formal training program must be acceptable to this Board and made up, either in whole or in part, of (a) an approved surgical residency; (b) approved preceptorship training programs which commenced after January 1, 1951, shall consist of 3 years for full-time training programs or 5 years for part-time training programs; (c) approved postgraduate work in surgery or the surgical sciences in a program acceptable to this Board. Not more than 1 year's credit shall be given for postgraduate work in approved graduate school programs.

During the period of his formal training, he shall have assisted in the performance of not less than 400 major surgical operations. By "first assistant" is meant one who, in addition to acting as first assistant at the operating table, has participated actively in the preoperative diagnostic procedures and postoperative care.

In qualifying for examination for certification only one credit for first assistantship is allowable for each case done by the surgeon regardless of the number of assistants working at the table.

8. He shall provide evidence to this Board that he has received satisfactory postgraduate training in the surgical sciences, including anatomy, physiolgoy, biochemistry, pathology, and pharmacology.

The applicant who began a specialty training program after January 1, 1951, and who has pursued a training program other than a residency approved by the Board of Trustees of the American Osteopathic Association, shall provide evidence to this Board that he has received satisfactory postgraduate training in the surgical sciences, including anatomy, physiology, biochemistry, pathology, pharmacology, and such other basic sciences as are necessary to a mature and comprehensive understanding of the prevention, diagnosis, therapy, and management of the disorders involved in the specialty.

A minimum of 100 clock hours shall be required in the basic science training programs, subdivided as follows:

a. A minimum of 10 clock hours each in the following subjects: anatomy, physiology, biochemistry, pathology, and pharmacology.

b. The remainder of the minimum required hours may be taken in any of the subjects mentioned or in other basic sciences related to the specialty.

Those applicants who qualify must submit acceptable documentary evidence, which may be further investigated at the discretion of this Board, of having pursued this advanced training in colleges, laboratories, clinics, hospitals, or other facilities satisfactory to this Board.

9. He must practice as a specialist in his field for a period of at least 2 years subsequent to the completion of the required minimum of 3 years of special training prior to being examined. He shall provide notarized documentary evidence that he has performed a minimum of 200 major surgical operations

upon his own responsibility subsequent to the completion of the minimum required period of formal training.

An applicant's scope of surgical practice must be such that his records will show that he has handled and is capable of handling (as shown by his morbidity, mortality, and end results) major surgical procedures in his respective specialty field. In surgery this would include such procedures as thyroidectomies, gastrectomies, excision of the colon, etc. An applicant whose hospital records show that he has never performed what are commonly referred to as heavy surgical procedures on his own responsibility would not be eligible for admission to examination.

10. He shall demonstrate his fitness to take the examination in any other manner required by this Board.

11. He shall present detailed case records, acceptable to this Board, of 25 major surgical procedures in which he was the responsible surgeon and handled by him as a surgical problem within the past 3 years. These records shall include history, physical examination, routine and special laboratory examinations, preoperative diagnosis, detailed findings, detailed operative procedure, postoperative diagnosis, progress notes, gross and histological description and diagnosis of the excised tissue, and case summary.

12. In the case of any applicant who was engaged in the practice of surgery (or one of the specialty fields of surgery coming under the jurisdiction of this Board) by 1939, or prior thereto, and who graduated prior to 1936, and who meets the general requirements stated in Article IV, Section 1, (a), (b), (c), (d), and (e) of the Bylaws, and who has maintained appropriate activity in American Osteopathic Association organizational work, specialty societies, hospital staff work, the pursuit of periodic postgraduate work, contributions to professional literature, or otherwise has indicated his consistent interest and competence in his specialty field, the requirements of Article IV, Section 1, (f) and (h) of the Bylaws may be waived and the applicant may be recommended for certification after passing an appropriate oral and/or clinical examination.

NEUROSURGERY

Each applicant for examination for certification in neurosurgery must present evidence that he has met the minimum basic requirements.

1. Under requirement No. 7 he shall have assisted in the performance of not less than 400 major surgical operations, 200 of which must be of a major neurosurgical nature.

2. Under requirement No. 9, he shall have performed a minimum of 200 major surgical operations in which he was the responsible surgeon, 100 of which must be of a major neurosurgical nature.

3. Under requirement No. 11, the case records presented shall consist of 25 major neurosurgical procedures.

4. He shall demonstrate his fitness to take the examination in any other manner required by this Board.

5. If this Board approves his application as to qualifications for examination in neurosurgery, the Secretary-Treasurer shall request the American Osteopathic Board of Neurology and Psychiatry to consider the application and, if acceptable, to examine the applicant in neurology.

6. If the applicant is successful before the American Osteopathic Board of Neurology and Psychiatry, the American Osteopathic Board of Surgery shall be so informed and shall, in turn, examine the applicant in neurosurgery.

7. If the applicant is successful in the examination before the American Osteopathic Board of Surgery, this Board shall make recommendation for certification to the Advisory Board for Osteopathic Specialists according to the regular procedure.

8. Upon final approval by the Board of Trustees of the American Osteopathic Association, a special certificate shall be issued in neurosurgery by this Board, signed by the Chairman and Secretary-Treasurer of the American Osteopathic Board of Neurology and Psychiatry, in addition to the officers of the American Osteopathic Board of Surgery and the Executive Secretary of the American Osteopathic Association.

GYNECOLOGICAL SURGERY

Each applicant for examination for certification in gynecological surgery must present evidence that he has met the minimum basic requirements.

a) Under requirement No. 7, he shall have assisted in the performance of not less than 400 major surgical operations, 200 of which must be of a major gynecological nature. Not more than 25 per cent of any one surgical procedure shall be permitted for accreditation towards the required number of operative assistantships.

b) Under requirement No. 9, he shall have performed a minimum of 200 major surgical operations in which he was the responsible surgeon, 100 of which must be of a major gynecological nature. Not more than 25 per cent of any one surgical procedure shall be permitted for accreditation towards the required number of operative procedures performed on his own responsibility.

c) Under requirement No. 11, the case records presented shall consist of 25 major gynecological procedures.

d) He shall demonstrate his fitness to take the examination in any other manner required by this Board.

ORTHOPEDIC SURGERY

Each applicant for examination for certification in orthopedic surgery must present evidence that he has met the minimum basic requirements.

1. Under requirement No. 7, he shall have assisted in the performance of not less than 400 major surgical operations, 200 of which must be of a major orthopedic nature.

2. Under requirement No. 9, he shall have performed a minimum of 200 major surgical operations in which he was the responsible surgeon, 100 of which must be of a major orthopedic nature.

3. Under requirement No. 11, the case records presented shall consist of 25 major orthopedic procedures.

4. He shall demonstrate his fitness to take the examination in any other manner required by this Board.

PERIPHERAL VASCULAR SURGERY

Each applicant for examination for certification in peripheral vascular surgery must present evidence that he has met the minimum basic requirements.

1. Under requirement No. 7, he shall have assisted in the performance of not less than 400 major surgical operations, 200 of which must be of a major peripheral vascular nature.

2. Under requirement No. 9, he shall have performed a minimum of 200 major surgical operations in which he was the responsible surgeon, 100 of which must be of a major peripheral vascular nature.

3. Under requirement No. 11, the case records presented shall consist of 25 major peripheral vascular surgical procedures.

4. He shall demonstrate his fitness to take the examination in any other manner required by this Board.

PLASTIC SURGERY

Each applicant for examination for certification in plastic surgery must present evidence that he has met the minimum basic requirements.

1. Under requirement No. 7, he shall have completed a minimum of 2 years of approved formal surgical training either in an approved residency or an approved full-time preceptorship training program followed by 1 or more years of acceptable training in the specialty field of plastic surgery. He shall have assisted in the performance of not less than 400 major surgical operations, 200 of which must be of a major plastic surgical nature.

2. Under requirement No. 9, he shall have performed a minimum of 200 major surgical operations in which he was the responsible surgeon, 100 of which must be of a major plastic surgical nature.

3. Under requirement No. 11, the case records presented shall consist of 25 major plastic surgical procedures.

4. He shall demonstrate his fitness to take the examination in any other manner required by this Board.

5. A physician certified in surgery who desires to have his certification changed from surgery to plastic surgery shall be required to follow the prescribed procedure.

UROLOGICAL SURGERY

Each applicant for examination for certification in urological surgery must present evidence that he has met the minimum basic requirements.

1. Under requirement No. 7, he shall have assisted in the performance of not less than 400 major surgical operations, 200 of which must be of a major urological nature.

2. Under requirement No. 9, he shall have performed a minimum of 200 major surgical operations in which he was the responsible surgeon, 100 of which must be of a major urological nature.

3. Under requirement No. 11, the case records shall consist of 25 major urological procedures.

4. He shall demonstrate his fitness to take the examination in any other manner required by this Board.

ANESTHESIOLOGY

Each applicant for examination for certification in anesthesiology must present evidence that he has met the following minimum requirements:

1. He shall have graduated from an approved osteopathic college at least 6 years prior to consideration of his application by this Board.

2. He shall be licensed to practice in the state or territory where he conducts his specialty practice.

3. He shall have been a member in good standing of the American Osteopathic Association and of his state or divisional society for a continuous period of at least 3 years immediately prior to making application for examination by this Board.

4. He shall be, and if certified continue to be, favorably known and recognized by his clientele as an osteopathic physician who is specializing in the practice of anesthesiology and shall publicize his osteopathic affiliations in an ethical manner.

5. He shall be able to show evidence of conformity to the standards set in the Code of Ethics of the American Osteopathic Association.

6. He shall have had an internship of at least 1 year in a hospital acceptable to this Board. The intern year of 9 months as prescribed by the Selective Service Board during World War II shall be acceptable. For physicians who graduated in 1942 or prior thereto, this Board may accept other qualifications in lieu of internship where the applicant's anesthetic experience and ability are beyond question.

7. He shall provide notarized documentary evidence of a minimum of 3 years of formal training subsequent to his internship (or its equivalent). This formal training program must be acceptable to this Board and shall include:

a) A period of at least 1 year of formal training in anesthesiology in a hospital acceptable to this Board and made up of either:

i) an approved residency;

or

ii) an approved full-time preceptorship training program.

b) A period of at least 2 years' special training in anesthesiology subsequent to the required 1 year of internship and the required 1 year of formal training. This special training may be made up, either in whole or in part, of:

i) an approved residency;

ii) approved preceptorship training. Approved preceptorship training programs may be either full-time or part-time. Two years of approved part-time preceptorship training shall be the equivalent of 1 year of full-time preceptorship training.

After the completion of the required 1 year of internship (or its equivalent), the required 1 year of formal training, and 1 year of the required 2 years of special training in anesthesiology, this Board may, at its discretion, accept 2 years of recognized specialty practice in anesthesiology as the equivalent of the third year of special training. In each year of specialty practice, the applicant must have administered at least 250 anesthetics of a diversified nature.

During the minimum 3-year period of formal training, there shall be evidence of sufficient clinical work in anesthesiology with a minimum of 250 anesthetics of a diversified nature administered annually.

For applicants who graduated in 1947 or prior thereto, in lieu of requirement No. 7, Item b), this Board may, at its discretion, accept 2 years of recognized specialty practice in anesthesiology, subsequent to the required 1 year of internship (or its equivalent), and the required 1 year of formal training, as the equivalent of 1 year of special training or 4 years of recognized specialty practice in anesthesiology as the equivalent of 2 years of special training. In each year of specialty practice, the applicant must have administered at least 250 anesthetics of a diversified nature.

8. He shall provide evidence to this Board that he has received satisfactory postgraduate training in the basic sciences, including anatomy, physiology, biochemistry, pathology, toxicology, and pharmacology.

The applicant who began a specialty training program in anesthesiology after January 1, 1951, and who has pursued a training program in anesthesiology other than a residency approved by the Board of Trustees of the American Osteopathic Association shall provide evidence to this Board that he has received satisfactory postgraduate training in the basic sciences, including anatomy, physiology, biochemistry, pathology, toxicology, and pharmacology.

A minimum of 100 clock hours shall be required in the basic science training programs, subdivided as follows:

a) A minimum of 10 clock hours each in the following subjects: anatomy, physiology, biochemistry, pathology, toxicology, and pharmacology.

b) The remainder of the minimum required hours may be taken in any of the subjects mentioned or in other basic sciences related to the specialty of anesthesiology.

Those applicants who qualify must submit acceptable documentary evidence, which may be further investigated at the discretion of this Board, of having pursued this advanced training in colleges, laboratories, clinics, hospitals, or other facilities satisfactory to this Board.

9. He shall provide evidence that he has practiced the specialty of anesthesiology for a period of at least 2 years subsequent to the completion of the required minimum of 3 years of formal training, or its equivalent, prior to being examined.

10. He shall provide evidence that he has administered a minimum of 1,250 anesthetics of a diversified nature.

11. He shall demonstrate his fitness to take the examination in any other manner required by this Board.

12. He shall present detailed case records, acceptable to this Board, of 25 major anesthetic procedures, using an outline furnished by this Board, which correlates the principal details of preoperative examination, the reasons for selection and utilization of the anesthetic agents, operative and postoperative conduct of the anesthesia.

13. He shall submit complete anesthetic case records and a report of pertinent factors where fatalities resulted within 24 hours in all patients anesthetized by the applicant during the 12-month period immediately prior to making application for examination by this Board.

14. He shall submit a list of the anesthetics administered by him for the 12-month period immediately prior to making application, naming the type of operation, the hospital in which the operation was performed, the patient's initials, the hospital case number, the name of the surgeon, the anesthetics administered, and the case termination. This list shall be certified by the administrator of the hospital in which the anesthetics were administered.

15. He shall submit a segregated total of all anesthetics administered in the 3-year period prior to making application, thereby showing the variety of agents and methods of anesthesia.

16. In the case of any applicant who was engaged in the practice of anesthesiology by 1939, or prior thereto, and who graduated prior to 1936, and who meets the general requirements stated in Article IV, Section 1, a), b), c), d), and e) of the Bylaws, and who has maintained appropriate activity in American Osteopathic Association organizational work, specialty societies, hospital staff work, the pursuit of periodic postgraduate work, contributions to professional literature or otherwise has indicated his consistent interest and competence in the field of anesthesiology, the requirements of Article IV, Section 1, f) and h) of the Bylaws may be waived and the applicant may be recommended for certification after passing an appropriate oral and/or clinical examination.

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(1) Crenshaw, J. E.: Am. J. Digest. Dis. *17*:387, 1950. (2) Lichtman, S. S.: Diseases of the Liver, Gallbladder and Bile Ducts, ed. 3, Philadelphia, Lea & Febiger, 1953, vol. 2, p. 951. (3) Sherlock, S.: Diseases of the Liver and Biliary System, Springfield, Charles C Thomas, 1955, p. 642. (4) King, J. C.: Am. J. Digest. Dis. *22*:102, 1955.

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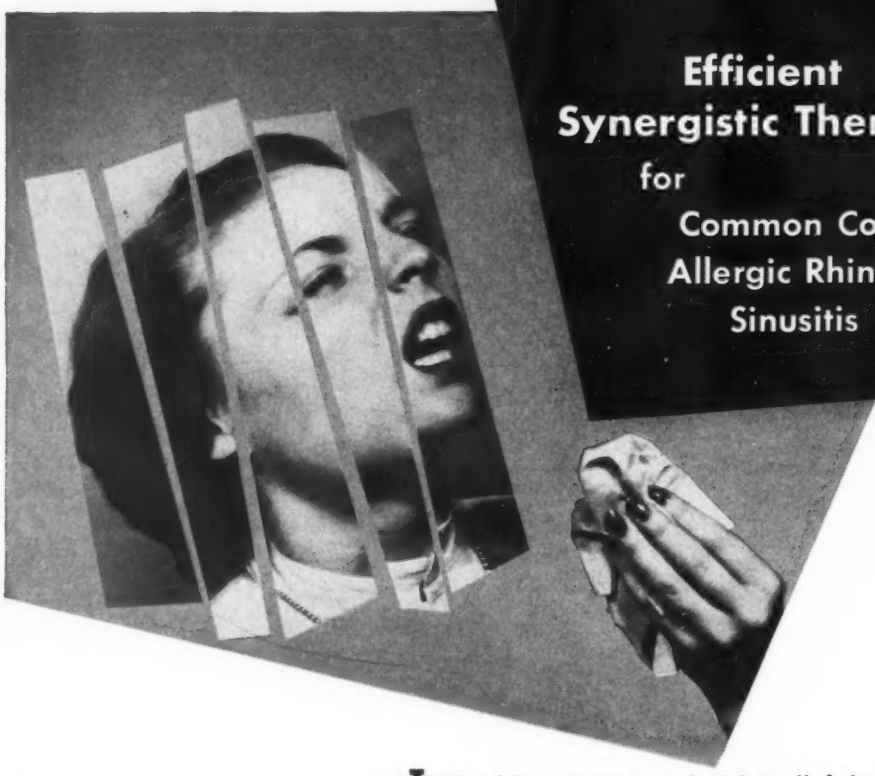

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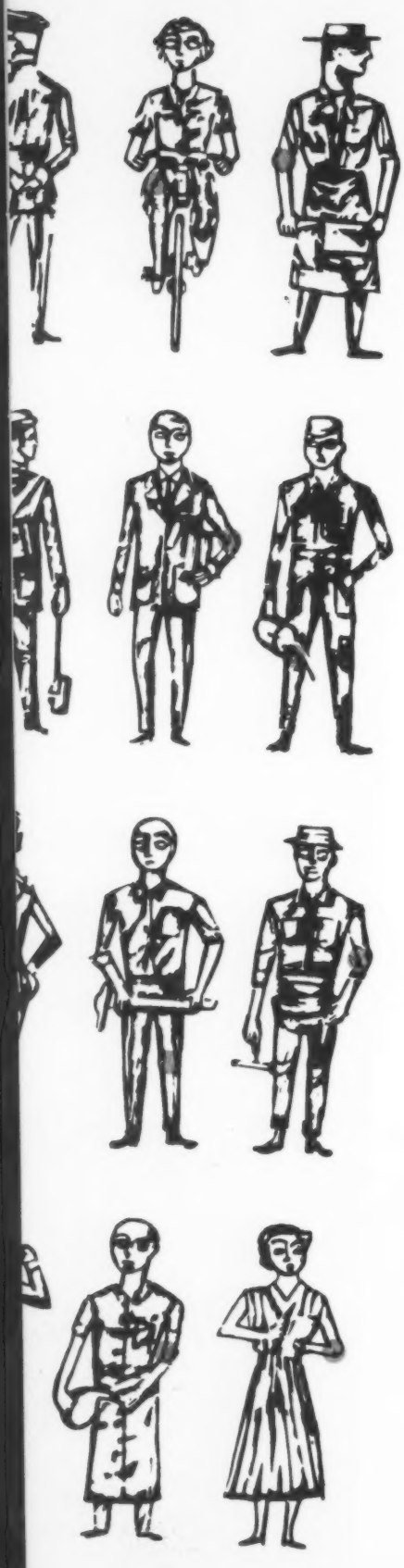

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METICORTEN,* brand of prednisone, Schering.

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SG-J-54

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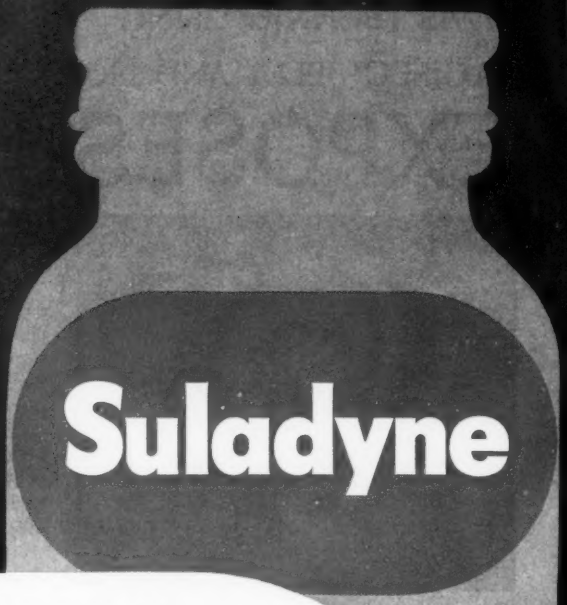


ATTACKS IN 3 WAYS

1. Provides rapid and high sulfa concentration in the urine.

2. Provides adequate sulfa blood levels in the infected tissue not reached by the high sulfa concentration in the urine.

3. Provides fast symptomatic relief making the patient more comfortable.

Sulfamethylthiadiazole

Sulfadiazine

This combination of sulfas provides a 2-prong attack on the infection and results in effective low sulfa dosage, high solubility and safety

Azodyne (Stuart brand of phenylazo-diaminopyridine HCl) Azodyne imparts an orange-red color to the urine.

1 TABLET CONTAINS:	
SULFAMETHYLTHIADIAZOLE	125 mg.
SULFADIAZINE	125 mg.
AZODYNE	75 mg.

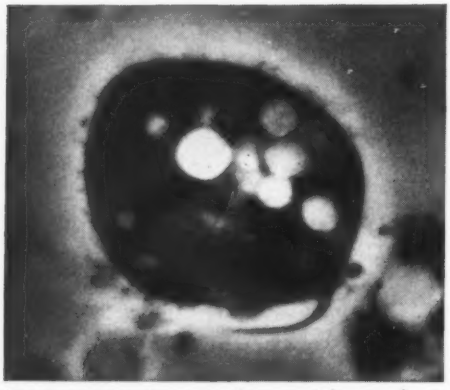
DOSE: Initially 4 tablets, then 2 tablets four times daily.

SUPPLIED: bottles of 100 tablets at all pharmacies.

Suladyne treats the infection and at the same time makes the patient more comfortable

Pasadena, **Stuart** California

DAVIS TECHNIC USING VAGISEC* JELLY AND LIQUID EXPOSES AND EXPLODES TRICHOMONADS HIDDEN AWAY IN RUGAE



Phase-contrast microscope shows a trichomonad in a mucinous vaginal smear.

MANY trichomonacides failed in years past largely because they reached only the parasites swimming freely in the vaginal canal—not those hiding under epithelial cells deep among the vaginal rugae. In fact, some agents actually coagulated the albuminous material lining the surface and protected the trichomonads![1]

Success at last. Today, however, you can overcome this problem because VAGISEC jelly and liquid quickly penetrate to trichomonads' hideaways. You can now treat vaginal trichomoniasis successfully, using the Davis technic. Carl Henry Davis, M.D., eminent gynecologist and author, and C. G. Grand, research physiologist, introduced VAGISEC liquid as "Carlendacide" and had it tested by over 100 well-known obstetricians and gynecologists. Dr. Davis states, ". . . over 90% of apparent cures have been obtained. . . ."[2]

Overpowering action. Three surface-acting chemicals in VAGISEC liquid, acting synergistically, not only reach trichomonads but explode them![3] A chelating agent complexes and removes the calcium of the calcium proteinate. A wetting agent removes lipid materials. A detergent denatures the protein. The parasites imbibe water, swell and explode.

The Davis technic.† Dr. Davis recommends a combination of office treatments and home treatments, using both VAGISEC jelly and liquid in home treatments. "A few women have infected cervical, vestibular or urethral glands and require other types of treatment. . . ."[2] It is well to remember the role of the male as carrier of the organism and prescribe protection against re-infection from the husband.[2]

Office treatment. Expose vagina with speculum. Wipe walls dry with cotton sponges and wash thoroughly for about three minutes with a 1:250 dilution of VAGISEC liquid. Remove excess fluid with cotton sponges. Dr. Davis recommends six office treatments, three the first week, two the second, and one the third.

Home treatment. Patient inserts VAGISEC jelly each night and douches with VAGISEC liquid (2 teaspoonfuls in 2 quarts of warm water) each morning except on office treatment days, through two menstrual periods. Continued douching two or three times a week helps to prevent re-infection. Pregnant women should have office treatments only.

Summary. The unique synergistic action of three agents comprising VAGISEC liquid reaches and explodes hidden as well as surface trichomonads. This therapy has a high rate of success and results in fewer flare-ups. VAGISEC jelly and liquid are non-toxic and non-irritating, and leave no messy discharge or stain.

*VAGISEC is the trade-mark of Julius Schmid, Inc. †Pat. App. for

JULIUS SCHMID, INC.
gynecological division
423 West 55th Street New York 19, N. Y.

Active ingredients: Polyoxyethylene nonyl phenol, Sodium ethylene diamine tetra-acetate, Sodium dioctyl sulfosuccinate. In addition, VAGISEC jelly contains Boric acid, Alcohol 5% by weight.

1. Davis, C. H.: Am. Jour. Obst. & Gynec. 68:559 (Aug.) 1954.
2. Davis, C. H.: West. J. Surg. 63:53 (Feb.) 1955.
3. Davis, C. H.: J.A.M.A. 157:126 (Jan. 8) 1955.

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- Rauwiloid, the alseroxylon fraction of Rauwolfia serpentina, Benth., is freed of the undesirable alkaloids of the whole root. Recent investigations confirm the desirability of Rauwiloid (because of the balanced action of its contained alkaloids) over single alkaloidal preparations; "...mental depression...was much less frequent with alseroxylon..."[2]

The dose-response of Rauwiloid is flat, and its dosage is uncomplicated and easy to prescribe...merely two 2mg. tablets at bedtime.

1. Cronheim, G., and Toekes, I.M.: Comparison of Sedative Properties of Single Alkaloids of Rauwolfia and Their Mixtures, Meeting of the American Society for Pharmacology and Experimental Therapeutics, Iowa City, Iowa, Sept. 5, 1955.

2. Moyer, J.H.; Dennis, E., and Ford, R.: Drug Therapy (Rauwolfia) of Hypertension. II. A Comparative Study of Different Extracts of Rauwolfia When Each Is Used Alone (Orally) for Therapy of Ambulatory Patients with Hypertension, A.M.A. Arch. Int. Med. *96*:530 (Oct.) 1955.

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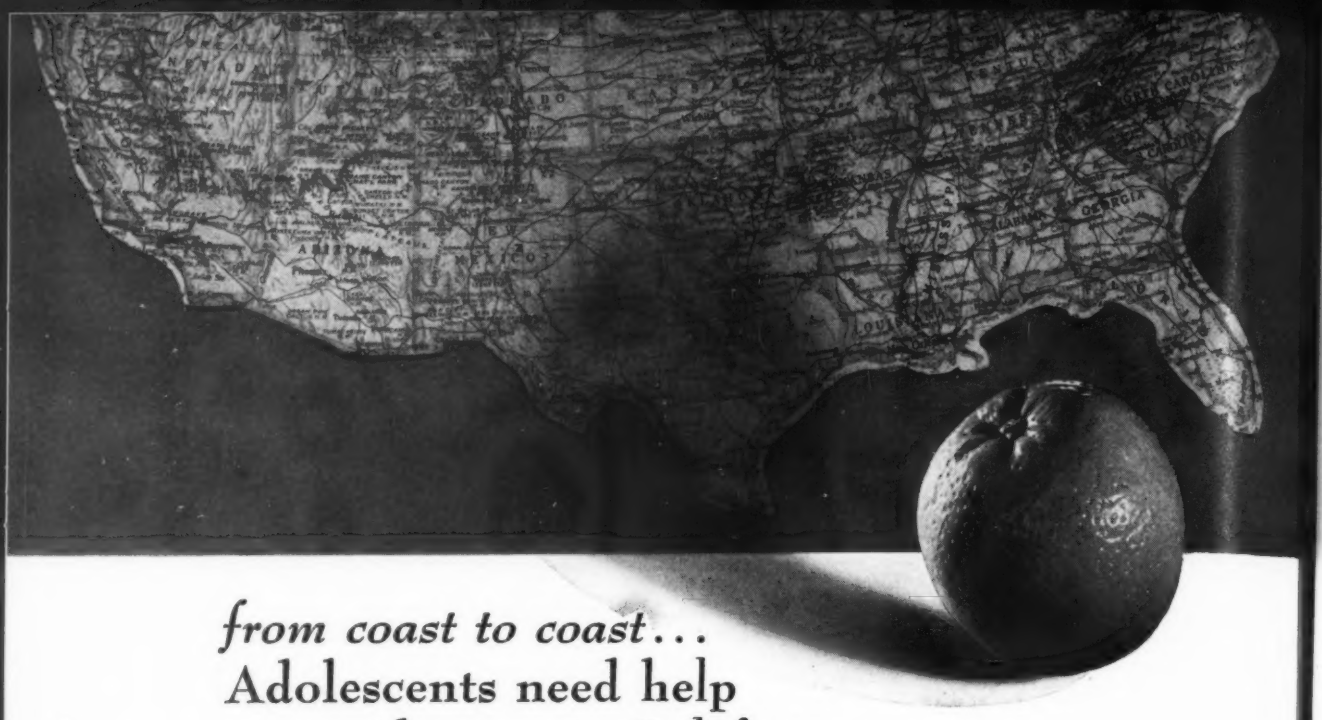


from coast to coast...

Adolescents need help to avoid vitamin C deficiency

Typical reports from nutritional surveys show:

Among 780 junior high school students in Maine, two-thirds of the boys and one-half of the girls eat diets deficient in vitamin C.[1]

Teen-age boys in Iowa neglect foods rich in vitamin C while girls stint on all foods to keep fashionably slim.[2]

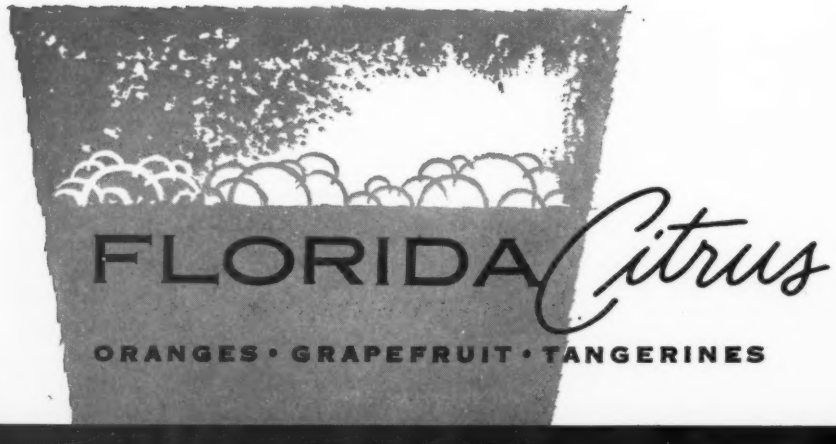
Daily meals of students in four colleges of the Pacific Northwest provide inadequate vitamin C more than 60% of the time.[3]

The 'Citrus Snack' vs. 'Empty Calories'

The taste appeal of the 'citrus snack'[4] makes this a simple, satisfactory way to help compensate for the nutritional deficits of teen-age meals which are too often of "the hot-dog, soft-drink, candybar type."[6]

Teen-age Acne Problems may be a manifestation of inadequate vitamin C intake, and excellent results have been reported by correcting this deficit.[5]

Florida Citrus Commission
Lakeland, Florida



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2. Eppright, E., et al.: Fed. Proc. 11:442, 1952.
3. Fincke, M. L., et al.: J. Am. Dietet. A. 24:957, 1948.
4. Mack, P. B.: at Conference on Research in Medicine, Lakeland, Florida, 1954.
5. Morris, G. E.: Postgrad. Med. 14:443, 1953; Am. Pract. & Dig. Treat. 5:658, 1954; A.M.A. Arch. Derm. & Syph. 70:363, 1954.
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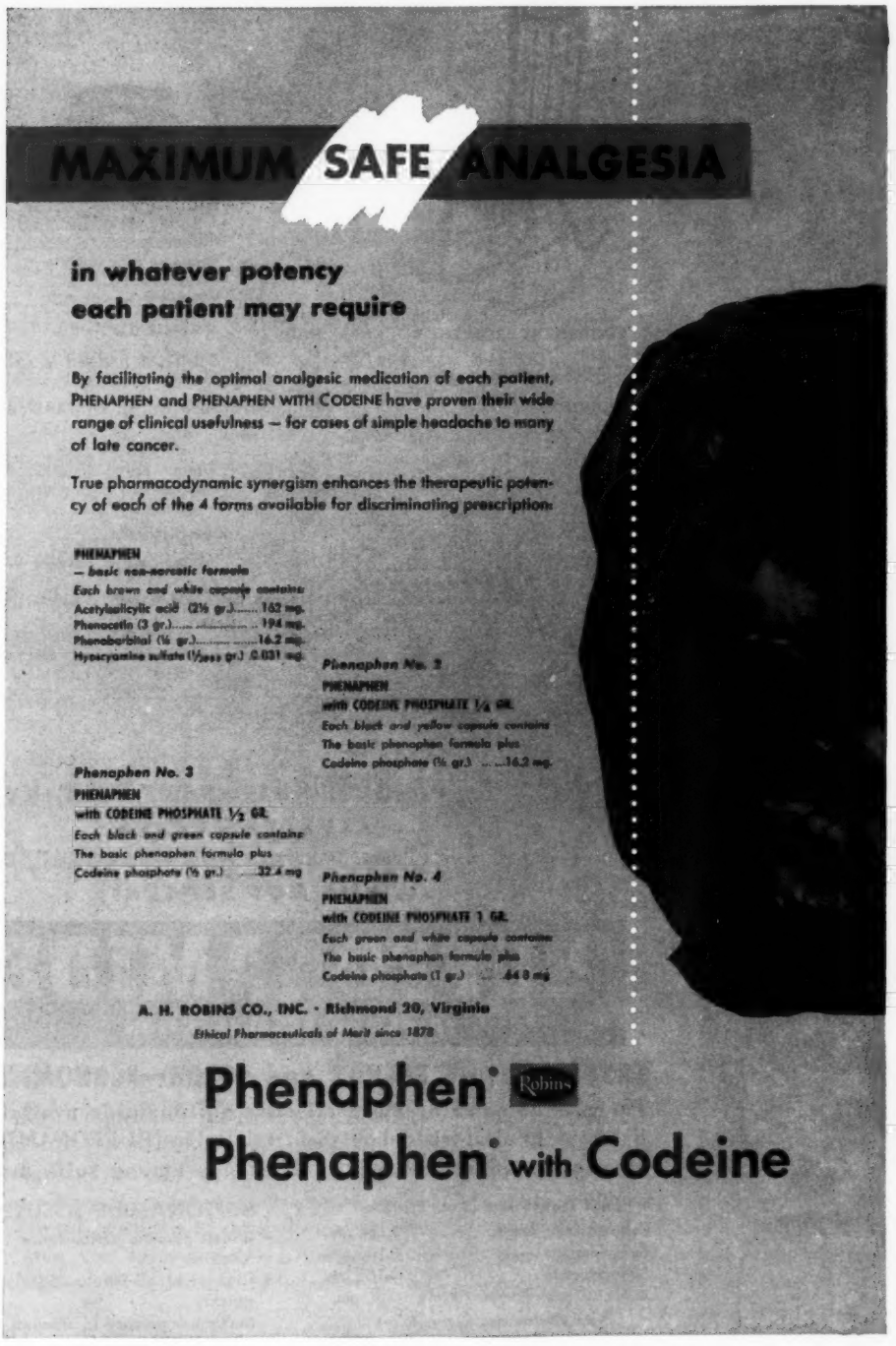
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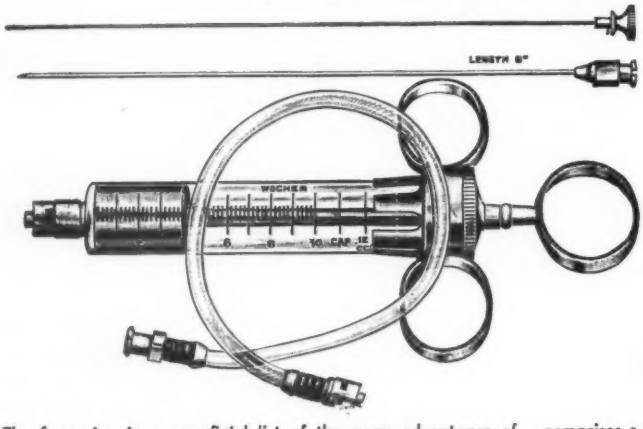
by Parke G. Smith, M. D. and Arthur Evans, M. D.



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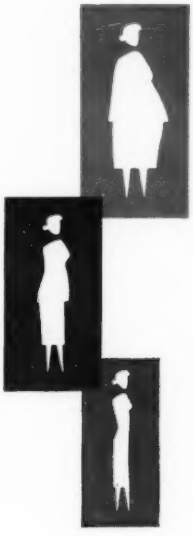

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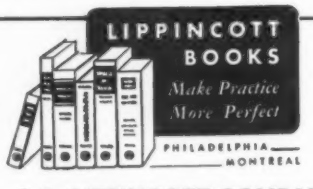

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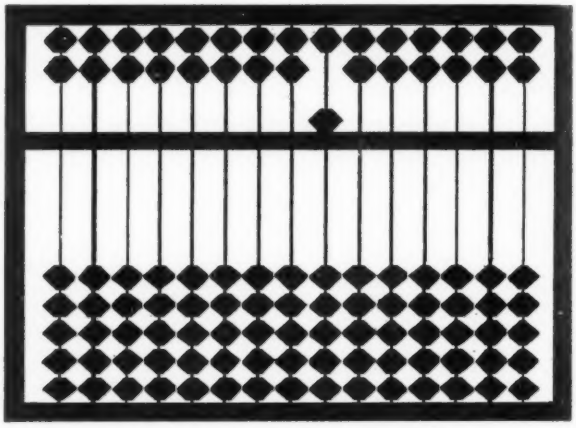

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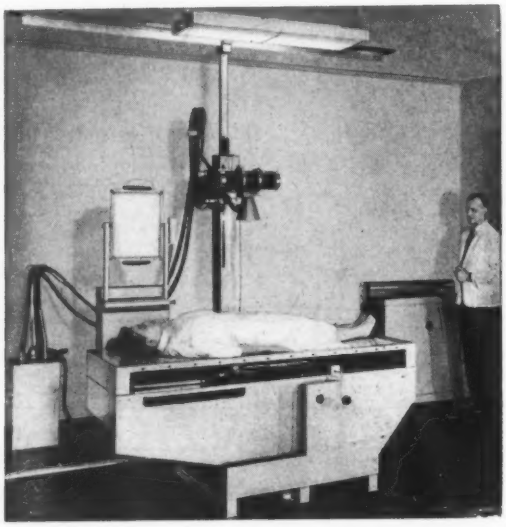

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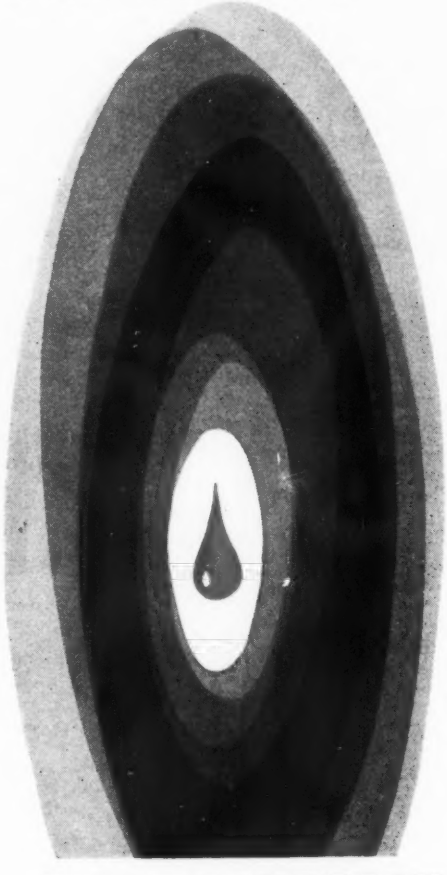

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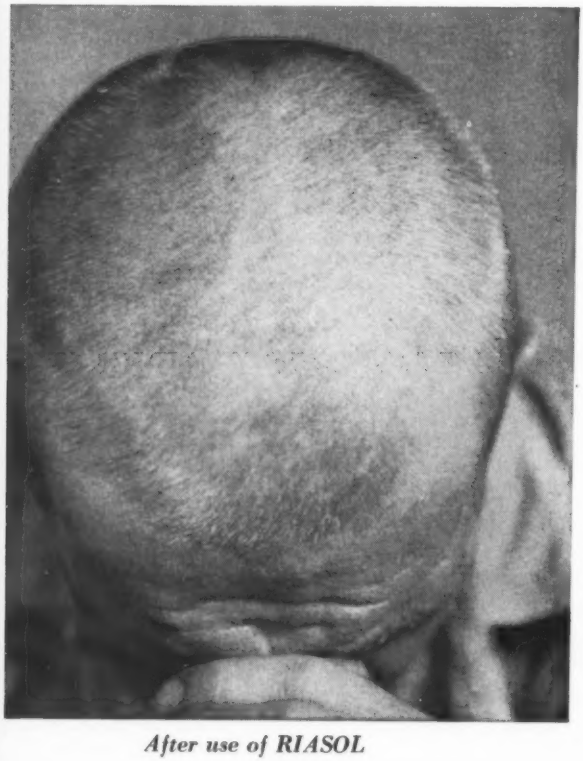

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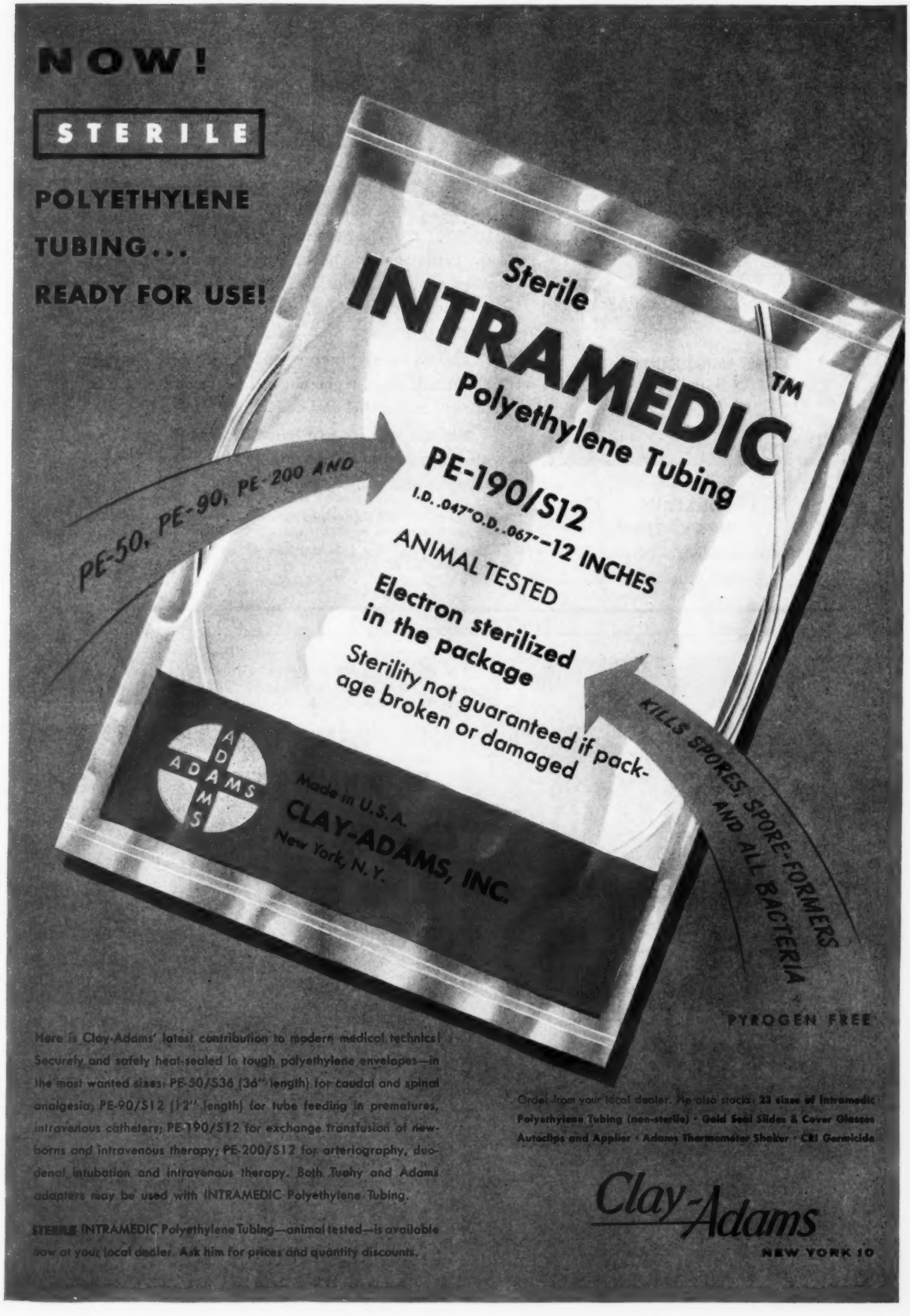

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*Steigmann, F., and Goldberg, E.: Ambulatory Continuous Drip Method in the Treatment of Peptic Ulcer, Am. J. Digest. Dis. 22:67 (Mar.) 1955.

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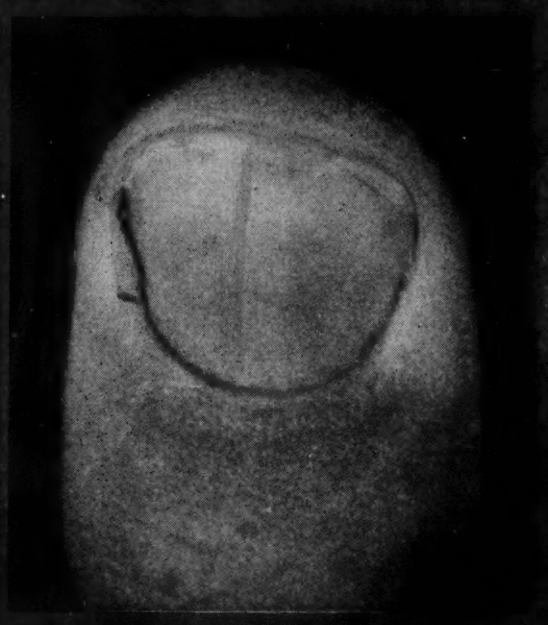

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1. Rosenberg, S. and Oster, K. A., "Gelatine in the Treatment of Brittle Nails," *Conn. State Med. J.* **19**:171-179, March 1955.
2. Tyson, T. L., *J. Invest. Dermat.* **14**:323, May 1950.

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Conventions and Meetings

Announcements

American Osteopathic Association, Sixtieth Annual Convention, Hotel Statler, New York City, July 16-20. Program Chairman, Myron C. Beal, 17 Vick Park A., Rochester 7, N. Y.

Academy of Applied Osteopathy, annual meeting, Hotel Waldorf, New York City, July 20. Secretary, Margaret W. Barnes, Box 1345, Carmel, Calif.

American College of Osteopathic Internists, annual meeting, Muehlebach Hotel, Kansas City, Mo., October 4-6. Program Chairman, Richard DeNise, 720-22 Sixth Ave., Des Moines 9, Iowa. Secretary, Glennard E. Lahrson, 460 Staten Ave., Oakland 10, Calif.

American College of Osteopathic Surgeons, annual meeting, Sheraton-Cadillac Hotel, Detroit, October 28-November 1. Secretary, Orel F. Martin, Box 474, Coral Gables 34, Fla.

American Osteopathic Academy of Orthopedics, annual meeting, Sheraton-Cadillac Hotel, Detroit, October 28-November 1. Secretary, J. Paul Leonard, 2673 W. Grand Blvd., Detroit 8.

American Osteopathic College of Anesthesiologists, annual meeting, Sheraton-Cadillac Hotel, Detroit, October 28-November 1. Secretary, Crawford M. Esterline, Box 155, Kirksville, Mo.

American Osteopathic College of Proctology, annual meeting, Hotel Statler, Dallas, Tex., March 27. Secretary, John W. Orman, 1623 E. 15th St., Tulsa 14, Okla.

American Osteopathic College of Radiology, annual meeting, Sheraton-Cadillac Hotel, Detroit, October 28-November 1. Program Chairman, George B. Hylander, West Side Osteopathic Hospital, 1253 West Market St., York, Pa. Secretary, F. A. Turfler, Jr., South Bend Osteopathic Hospital, 118 S. William St., South Bend 2, Ind.

American Osteopathic Hospital Association, annual meeting, Sheraton-Cadillac Hotel, Detroit, October 28-November 1. Program Chairman, Mr. Philip Rosenthal, Metropolitan Hospital, Philadelphia. Secretary, Mrs. Byron Axtell, Princeton, Mo.

American Osteopathic Society of Proctology, annual meeting, Hotel Statler, Dallas, Tex., March 28-30. Program Chairman, E. R. Horton, Jr., 214 E. DeWald St., Fort Wayne 5, Ind. Secretary, Carl S. Stillman, Jr., 3523 Fifth Ave., San Diego 3, Calif.

Arizona, annual meeting, Arizona Inn, Tucson, April 27-29. Program Chairman, J. B. Carson, 2813 S. Sixth Ave., Tucson. Secretary, Homer E. Allshouse, 2243 N. 12th St., Phoenix 22.

California, annual meeting, Hotel del Coronado, Coronado, May 2-6. Program Chairman, Milton Futterman, 2028 E. First St., Los Angeles 22. Executive Secretary, Mr. Thomas C. Schumacher, 1298 Wilshire Blvd., Los Angeles.

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Colorado, annual meeting, Denver, May 5. Program Chairman, A. E. Nichols, 1332 Del Mar Parkway, Denver 8. Secretary, C. Robert Starks, 1459 Ogden St., Denver 18.

Connecticut, midyear meeting, Bond Hotel, Hartford, February 18-19. Program Cochairmen, James T. Berry, 410 Asylum St., Hartford 3, and E. R. Lamb, 44 Whitney St., Hartford 5. Secretary, C. W. Cornbrooks, 182 Post Road, Darien.

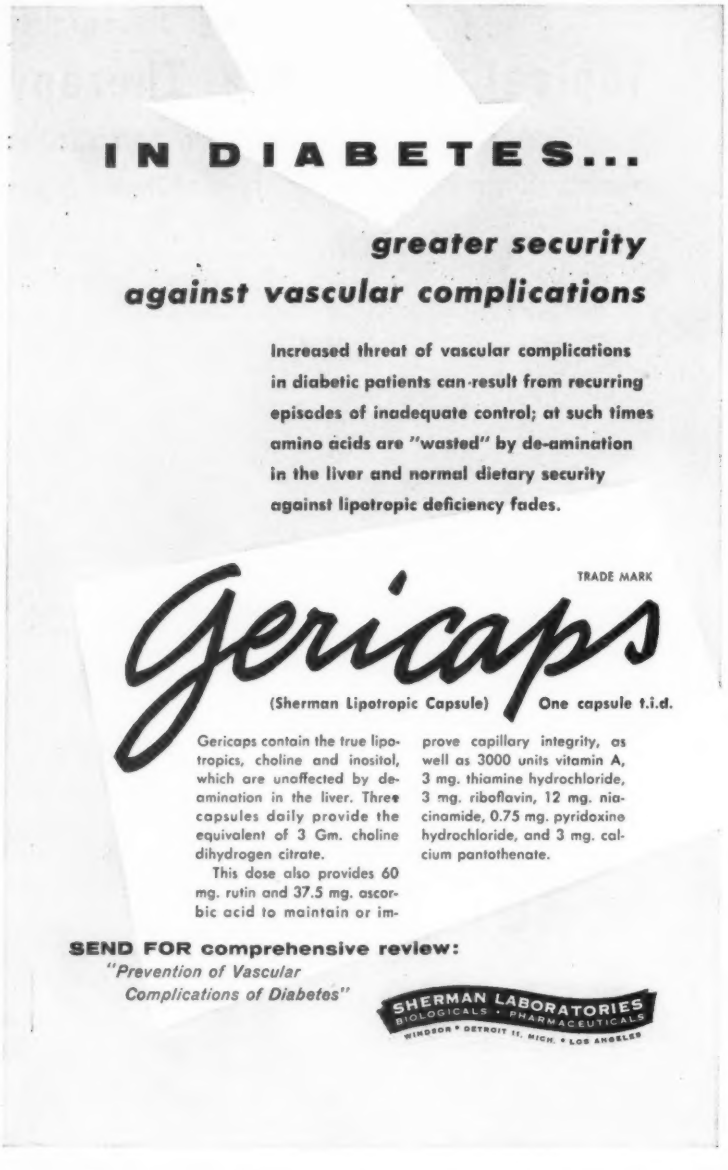
Eastern Osteopathic Association, annual meeting, Hotel Statler, New York City, March 24-25. Program Chairman, Chester L. Losee, 212 Prospect St., Westfield, N. J. Secretary, Frank B. Tompkins, Baltimore Life Bldg., Baltimore 1.

Florida, annual meeting, Fort Harrison Hotel, Clearwater, May 17-19. Program Chairman, Paul E. Wilson, 802 E. Ocklawaha Ave., Ocala. Secretary, Dominic Raffa, 5009 Central Ave., Tampa 3.

Georgia, annual meeting, General Oglethorpe Hotel, Savannah, April 26-28. Program Chairman, Wade Holloway, 509 Upchurch Bldg., Thomasville. Secretary, Walter B. Elliott, Jr., 702 Mortgage Guarantee Bldg., Atlanta 3.

Idaho, annual meeting, Owyhee Hotel, Boise, May 18-20. Program Chairman, L. J. Anderson, 308 Eastman Bldg., Boise. Secretary, Emery J. Miller, 124-28 Caldwell Blvd., Nampa.

Illinois, annual meeting, Palmer House, Chicago, April 27-29. Executive Sec-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retary, Mr. Douglas Durkin, Room 521, 53 W. Jackson Blvd., Chicago 4.

Indiana, annual meeting, Notre Dame University and Morris Inn, South Bend, May 14-16. Program Chairman, A. F. Kull, South Bend Osteopathic Hospital, 118 S. William St., South Bend 2. Secretary, Arabelle Baker Wolf, 809-13 Odd Fellows Bldg., Indianapolis 4.

Iowa, annual meeting, Hotel Savery, Des Moines, May 20-22. Program Chairman, Clive R. Ayers, Grant. Secretary, Mr. Herman A. Walter, 200 Walnut Bldg., Des Moines 9.

Kansas, midyear meeting, Tioga Hotel, Chanute, February 16. Program Chairman, D. D. Harbaugh, 12 Central Bldg., Coffeyville. Annual meeting, Baker Hotel, Hutchinson, May 12-16. Program Chairman, B. L. Darling, Osteopathic Clinic, 1404 Main St., Winfield. Executive Secretary, Mr. Lloyd L. Hall, Room 612, National Bank of Topeka Bldg., Topeka.

Kentucky, annual meeting, Brown Hotel, Louisville, October 10-11. Program Chairman, Charles R. Conley, 300 Main St., Greenup. Secretary, Martha Garnett, 2829 Brownsboro Road, Louisville 6.

Maine, annual meeting, Samoset Hotel, Rockland, June 14-16. Professional Education Chairman, Richard Wallace, Hollis Center. Midyear meeting, Elmwood Hotel, Waterville, December 7-8. Secretary, Roswell P. Bates, 72 Main St., Orono.

Michigan, annual meeting, Pantlind Hotel, Grand Rapids, October 1-3. Program Chairman, George E. Himes, Flint Osteopathic Hospital, 416 W. Fourth Ave., Flint 4. Executive Secretary, Mr. Harve Lamont Smith, 81 Glendale, Highland Park 3.

Minnesota, annual meeting, Minneapolis, May 3-5. Program Chairman, Constance Idtse, 47 S. Ninth St., Minneapolis 2. Secretary, E. R. Komarek, 301 Granite Exchange Bldg., St. Cloud.

Missouri, annual meeting, Hotel Jefferson, St. Louis, October 9-11. Program Chairman, R. A. Michael, 209 Monroe St., Jefferson City. Executive Secretary, Mr. Paul D. Adams, 325 E. McCarty St., Jefferson City.

National Osteopathic Child's Health Conference and Clinic, Municipal Auditorium, Kansas City, Mo., April 9-11. Program Chairman, Robert R. Tonkens, 5910 Prospect Ave., Kansas City, Mo. Secretary, Luther W. Swift, 2105 Independence Ave., Kansas City 24, Mo.

New Jersey, annual meeting, Berkeley-Carteret Hotel, Asbury Park, March 10-11. Program Cochairmen, George W. Northup, 104 S. Livingston Ave., Livingston, and Harry A. Sweeney, 25 S. Illinois Ave., Atlantic City. Executive Secretary, Mr. I. J. Tecker, 21 Hancock St., Riverside.

New Mexico, annual meeting, Hilton Hotel, Albuquerque, April 19-21. Program Chairman, H. D. Thomas, 3200 E. Silver Ave., Albuquerque. Secretary, Robert E. Smith, 205 N. First, Lovington.

New York, midyear meeting, Hotel Syracuse, Syracuse, February 25-26. Program Chairman, Francis J. Beall, Jr., 1429 James St., Syracuse 6. Annual meeting, Hotel Utica, Utica, October 12-13. Program Chairman, Allen S. Prescott, 800 Keith Bldg., Syracuse 2. Acting Secretary, Hewett W. Strever, 225 Titus Ave., Rochester 17.

North Carolina, annual meeting, Battery Park Hotel, Asheville, October 25-27. Program Chairman and Secretary, S. Dales Foster, 710 Public Service Bldg., Asheville.

North Dakota, annual meeting, Gardner Hotel, Fargo, May 2-3. Program Chairman, Frank B. Bayer, 510 Black Bldg., Fargo. Secretary, Georgianna Pfeiffer, 110½ Broadway, Fargo.

Northwest Osteopathic Convention, Chinook Hotel, Yakima, Washington, June 25-27. Program Chairman, Wilbert B. Saunders, 4730 University Way, Seattle 5.

Ohio, annual meeting, Neil House, Columbus, May 7-9. Program Chairman, George O. Hoover, 91 S. Main St., Oberlin. Executive Secretary, Mr. William S. Konold, 50 E. Broad St., Columbus 15.

Oklahoma, annual meeting, Biltmore Hotel, Oklahoma City, October 30-November 1. Program Chairman, James C. Hulsey, 1942 N.E. 23rd St., Oklahoma City 5. Executive Secretary, Mr. Walter L. Gray, 210-12 Braniff Bldg., Oklahoma City.

Ontario, annual meeting, Royal Hotel,

Guelph, May 3-5. Secretary, A. V. DeJardine, 205 Yonge St., Toronto 1.

Oregon: See Northwest Osteopathic Convention.

Rhode Island, annual meeting, Warwick Country Club, Warwick, March 7-8. Program Chairman, Richard Dowling, 1039 Broad St., Providence 5. Secretary, J. Weston Abar, 824 Broad St., Providence 7.

South Dakota, annual meeting, Cataract Hotel, Sioux Falls, June 10-12. Program Chairman, L. H. Shoraga, Alcester. Secretary, Earl W. Hewlett, 417 W. 27th St., Sioux Falls.

Tennessee, annual meeting, New Southern Hotel, Jackson, April 22-25. Program Chairman, J. A. Moore, 407 Tucker St., Dyersburg. Secretary, J. M. Moore, Jr., 200 High St., Trenton.

Texas, annual meeting, Baker Hotel, Dallas, April 22-28. Program Chairman, Robert J. Brune, 1819 S. Brownlee, Corpus Christi. Executive Secretary, Phil R. Russell, 512 Bailey St., Fort Worth 7.

Utah, annual meeting, Ambassador Athletic Club, Salt Lake City, June 23. Program Chairman, Wilford G. Hale, 506 West 2nd South, Logan. Secretary, Alice E. Houghton, 600 Zion's Savings Bank Bldg., Salt Lake City 11.

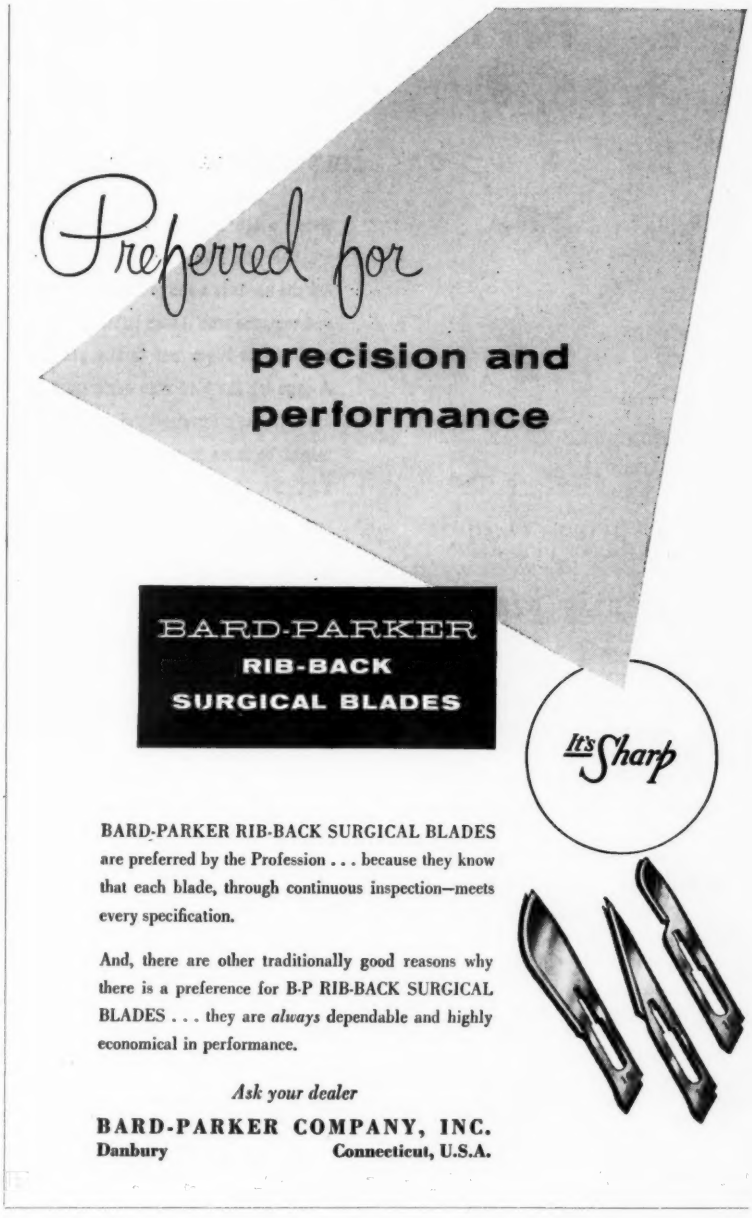
Virginia, annual meeting, The Lodge, Williamsburg, May 25-26. Program Chairman, Vincent H. Ober, 407-11 Bankers Trust Bldg., Norfolk 10. Secretary, John A. Cifala, 2778 N. Washington Blvd., Arlington.

Washington: See Northwest Osteopathic Convention.

West Virginia, annual meeting, Daniel Boone Hotel, Charleston, June 2-5. Program Chairman, Walter B. Goff, 429 16th Street, Dunbar. Secretary, Guy E. Morris, 542 Empire Bank Bldg., Clarksburg.

Western States Osteopathic Society of Proctology, annual meeting, Mayo Hotel, Tulsa, Okla., October 8-10. Program Chairman, Glenn Miller, 2100 N. Robinson St., Oklahoma City 3. Secretary, Earle F. Waters, 925 E. South Temple St., Salt Lake City 2.

Wisconsin, annual meeting, Hotel Wisconsin, Milwaukee, April 23-25. Program Chairman, R. D. Walling, 709 Oak St., Baraboo. Secretary, Edwin J. Elton, 1518 N. 70th St., Wauwatosa 13.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Basic science examinations March 20 at the University of Arizona, Tucson. Applications must be filed 2 weeks prior to the examination. Address Herbert D. Rhodes, Ph.D., secretary, Basic Science Board, University of Arizona, Tucson.

COLORADO

Basic science examinations March 7-8 at the Y.M.C.A. Bldg., E. 16th Ave. and Lincoln St., Denver. Applications must be filed by February 22. Address Esther B. Starks, D.O., secretary, Basic Science Board, 1459 Ogden St., Denver 18.

Dr. Starks has been re-elected secretary-treasurer of the Board.

CONNECTICUT

Examinations March 13-14. Applications must be filed 2 weeks prior to examination. Address Frank Poglitsch, D.O., secretary, Osteopathic Examining Board, 300 Main St., New Britain.

DISTRICT OF COLUMBIA

Professional examinations May 14-15. Address Mr. Paul Foley, Deputy Director, Department of Occupations and Professions, 1740 Massachusetts Ave., N.W., Washington 6.

Basic science examinations April 23-24 at 1740 Massachusetts Ave., N.W., Washington. Applications must be filed by April 1. Address Mr. Foley.

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Examinations April 3-5 in Chicago. Address Mr. Frederic B. Selcke, Superintendent of Registration, Department of Registration and Education, State House, Springfield.

IOWA

Officers and members of the Board of Osteopathic Examiners are: Chairman, R. B. Anderson, Manning; secretary, W. S. Edmund, Red Oak; assistant secretary, Mr. Herman W. Walter, Des Moines; and director of examinations, Lydia T. Jordan, Davenport.

Basic science examinations April 10 at the Capitol Bldg., Des Moines. Address Ben H. Peterson, Ph.D., secretary, Board of Basic Science Examiners, Coe College, Cedar Rapids.

KANSAS

Examinations February 16-18 at Topeka. Address Forrest H. Kendall, D.O., secretary, Board of Osteopathic Examination and Registration, 420½ Pennsylvania Ave., Holton.

MICHIGAN

Officers of the Board of Osteopathic Registration and Examination are: President, Willis H. Yeamans, Mt. Clemens; vice president, Roy G. Bubeck, Jr., Grand Rapids, and secretary-treasurer, Charles J. Manby, Battle Creek.

Basic science examinations May 14-15 at Detroit and Ann Arbor. Address Mrs. Anne Baker, secretary, Board of Examiners in the Basic Sciences, 116 Mason Bldg., Lansing.

MINNESOTA

Basic science examinations April 3-4 at the University of Minnesota, Minneapolis. Applications must be filed by March 10. Address Raymond N. Bieter, M.D., secretary, Board of Examiners in the Basic Sciences, 105 Millard Hall, University of Minnesota, Minneapolis 14.

MONTANA

Examinations March 6. Address Asa Willard, D.O., secretary, Board of Osteopathic Examiners, Wilma Bldg., Missoula.

NEBRASKA

Basic science examinations May 1-2. Address Mr. Husted K. Watson, Director, Bureau of Examining Boards, Department of Health, State Capitol Bldg., Lincoln 9.

NEVADA

Basic science examinations April 3. Address Donald G. Cooney, Ph.D., secretary, Board of Examiners in the Basic Sciences, Box 9005, University Station, Reno.

NEW HAMPSHIRE

Examinations March 14-15 at Concord. Address John S. Wheeler, M.D., secretary, Board of Registration in Medicine, State House, Concord.

NEW MEXICO

Basic science examinations April 15. Address Mrs. Marguerite Cantrell, secretary, Board of Examiners in the Basic Sciences, P.O. Box 1522, Santa Fe.

OHIO

James O. Watson, Columbus, has been reappointed to the Medical Board for a term expiring in July, 1959.

OKLAHOMA

Basic science examinations March 30-31 at the University of Oklahoma School of Medicine, Oklahoma City. Applications must be filed 10 days prior to examination. Address Secretary of State, State Capitol Bldg., Oklahoma City.

RHODE ISLAND

Professional examinations April 5-6. Address Mr. Thomas B. Casey, Administrator of Professional Regulation, 366 State Office Bldg., Providence.

Basic science examinations May 16 in Room 366, State Office Bldg., Providence. Address Mr. Casey.

TENNESSEE

Examinations in February and July at Nashville. Applications must be filed 15 days prior to examination. Address M. E. Coy, D.O., secretary, Board of Examination and Registration for Osteopathic Physicians, 1226 Highland, Jackson.

WISCONSIN

Basic science examinations April 7 at the Assembly Chamber, State Capitol, Madison. Applications must be filed by March 30. Address Mr. William H. Barber, secretary, Board of Examiners in the Basic Sciences, 621 Ransom St., Ripon.

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Before March 1—Colorado, $2.00 if legal resident of Colorado; $10.00 if not legal resident of Colorado. Address Mrs. Beulah H. Hudgens, executive secretary, Board of Medical Examiners, 831 Republic Bldg., Denver 2.

April 1—Montana, $2.00 for those in active practice; $1.00 for those inactive. Address Asa Willard, D.O., secretary, Board of Osteopathic Examiners, Wilma Bldg., Missoula.

April 1—Wyoming, $2.50. Address Franklin D. Yoder, M.D., secretary, Board of Medical Examiners, New State Office Bldg., Cheyenne.

May 1—Iowa, $1.00. Address Mr. Herman W. Walter, assistant secretary, Board of Osteopathic Examiners, 200 Walnut Bldg., Des Moines 9.

May 1—Washington, $2.00. Address Mr. Edward C. Dohm, secretary, Professional Division, Department of Licenses, Olympia.

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EXAMINATION BY NATIONAL BOARD

The National Board of Examiners for Osteopathic Physicians and Surgeons conducts Parts I and II of its examination on the first Thursday and Friday of each May and December at the six approved colleges. Application blanks may be obtained from the secretary or the dean of the college, and the completed application blank, together with a passport photograph and check for the parts to be taken, must be in the secretary's office by the November 1 or April 1 preceding the examination.

Examinations in Part I consist of anatomy, including histology and embryology; physiology; physiological chemistry; general pathology; and bacteriology, including parasitology and immunology.

Part II consists of examinations in surgery, including applied anatomy, surgical pathology, and surgical specialties; obstetrics and gynecology; pediatrics; neurology and psychiatry; public health, including hygiene, medical jurisprudence; osteopathic principles, therapeutics, including pharmacology and materia medica.

Part III is an oral and practical examination given under the supervision of a chief examiner who is a member of the Board and by a panel of associate examiners. Subjects covered in Part III are anatomy; physiology; pathology; osteopathic principles; therapeutics, and pharmacology; surgery; ophthalmology and otorhinolaryngology; obstetrics and gynecology; physical and clinical diagnosis; public health and communicable diseases.

Part III examinations will be given at Philadelphia, March 3-4, at Kirksville, Mo., March 10-11, and at Los Angeles, March 24-25. Applications must have been filed by January 1.

These are oral examinations which the candidate may take after having satisfactorily completed the first 6 months of a 1-year internship in a hospital approved by the American Osteopathic Association for intern training. Part III is given annually at the above-named colleges.

Eligibility requirements are as follows: Part I, satisfactory completion of the first 2 years in an approved school of osteopathy; Part II, satisfactory completion of Part I and of the first two quarters or trimesters of the senior year in an approved osteopathic college; Part III, satisfactory completion of Part II and at least 6 months of a 1-year internship approved by the American Osteopathic Association. The internship requirement does not apply to candidates who took Part I prior to July, 1950.

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ACCIDENTAL DEATH FROM ELECTRIC CURRENT*

Electric current has long been considered a basic necessity in American life. During the past quarter of a century, residential consumers of electricity have about doubled in number while the use of appliances and power tools has greatly multiplied. Industrial consumption of electricity has likewise increased by leaps and bounds as economic production has expanded and processes have become more and more mechanized. Despite these developments, the death rate from accidents involving electric current has decreased over the years. At present, such accidents take about 1,000 lives annually in the United States, or 7 per million population, whereas a quarter century ago the corresponding death rate was 9 per million.

Fatalities due to electric current show a distinct seasonal pattern, beginning to increase in the spring and reaching a peak in the summer; more than two fifths of the deaths each year occur in June, July, and August. The higher mortality in summer results largely from increased activity in the repair and extension of electric lines and from the generally greater amount of outdoor work which brings men in accidental contact with electric lines. Moreover, when the body is wet with perspiration, as is often the case in warm weather, its resistance to electric shock is lowered.

About 95 percent of the fatal accidents caused by electric current in the United States occur among males, reflecting largely the effect of occupational hazards. It is not surprising, therefore, that the victims are concentrated principally in the main working ages of life. Of the 2,044 persons who lost their lives from electric shock in the two years 1951-1952, no less than 1,738 were males in the age range from 15 to 64.

Somewhat over one fifth of all the males killed by electric current in 1951-1952 sustained their injuries on industrial premises—electric light and power plants, factories, workshops, and similar places. Nearly the same proportion of men were electrocuted on streets and highways. Most of these fatalities resulted from contact with high tension wires by utility company personnel, construction workers —particularly crane and hoist operators —and others employed in associated industries. A substantial number of the deaths on streets and highways resulted from persons touching either fallen power lines or automobiles energized by such lines.

Hazards on the farm have been responsible for an appreciable loss of life from electric shock; the toll was 181 (177 of them males) in 1951-1952. For the most part these fatal accidents involved farm production equipment, such as irrigation pumps, machinery, and electric fences. The use of unsafe and makeshift wiring was a fairly common source of fatal injury on the farm. Another practice which proved fatal in many instances was the careless moving of farm equipment or well casing near power lines.

Accidents in the home accounted for one sixth of the deaths due to electric current among males and for about four fifths of those among females in 1951-1952. In recent years the number of such deaths in the home has increased somewhat, particularly among males; this may reflect the increase in do-it-yourself activities. Fatal injuries due to electric current in the home were brought about by a variety of circumstances, such as the use of defective extension cords, a particularly dangerous practice in damp locations; the falling of a radio, fan, heater, or other appliance into a bathtub where a person is bathing; and children playing with exposed wires, light sockets, and defective appliances. In addition to this toll from ordinary house current, a few deaths in recent years have resulted from contact with high tension lines by persons attempting to install or repair television aerials.

Deaths from electric shock have also occurred in such places as mines and quarries, public buildings, resident institutions, and places for recreation. The relatively large concentration of deaths in other specified places included a considerable number of electric light and power linemen working on poles and some boys playing on electric poles or flying kites or model planes.

*Reprinted from *Statistical Bulletin*, Metropolitan Life Insurance Company, May, 1955.

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THE TRACHOMA STORY*

By Arthur A. Siniscal, M.D.†

The importance of trachoma "as a source of human suffering, as a cause of blindness, and as a national economic loss over large tracts of the world's surface is second to none among the diseases of the eye, or indeed, among diseases of all kinds."

Thus Sir Stewart Duke-Elder, a distinguished British ophthalmologist, assessed trachoma in a textbook published in 1934.[1] As late as 1950, it was estimated that 15 to 20 percent of the world population suffered from this disease.[2]

Throughout the world, trachomatologists, ophthalmologists, sociologists, public health workers, and others are striving earnestly to improve the health and socioeconomic conditions of those afflicted with trachoma. But they wave no magic wand; what they accomplish, they accomplish through steady, organized effort, which depends in turn upon public understanding and support. The following pages tell of medicine's planned attack against this ancient infection.

According to Moutinho,[3] trachoma was well known in the civilizations of the four great river valleys—the Hwang Ho and the Yangtze Kiang, the Indus and Ganges, the Euphrates and Tigris, and the Nile—many centuries before Christ. It was recognized and treated in ancient Egypt, Greece, and Rome, as well as in countries of Biblical fame. The Moslem conquests probably led to its spread to Europe as early as the eighth century,[4] and, undoubtedly, Napoleon's campaign to Egypt in 1798-1802 was responsible in large measure for its dispersion among the Europeans.[5]

Believed to have been introduced into the United States during colonial times by European immigrants,[6] the disease was spread throughout a central belt reaching from the Allegheny Mountains to Kansas and Oklahoma, among the Indians as well as others. According to Cosgrove,[7] the trachoma found in Missouri and Arkansas originated from persons who came into these States from Tennessee and Kentucky. The trachoma in New Mexico and Arizona and probably California is believed to have come from Mexico.[8]

Today, trachoma is found on every continent.[4] It is common in most of Asia, where it affects from 30 to 60 percent of the population. It is somewhat common in Europe, where it affects approximately 5 percent of the population. More prevalent in the Balkan States and in northern European countries than elsewhere on that continent, it is present also in France, the Netherlands, Germany, Austria, Hungary, Italy, Ireland, Great Britain, Norway, Sweden, and Denmark.

Once a serious public health problem in the United States, particularly in the central portion where it is considered endemic, trachoma is now relatively rare. It is still present, however, in Missouri and Arkansas and, to a lesser extent, in southern Illinois. In Missouri, active cases are found in the southern half of the State, particularly in the cotton-growing lowlands and in remote regions of the Ozark hill country. Accounting for 1 out of 4 pensioners on the State's blind pension roll 25 years ago, trachoma now is the disease of only 1 out of every 10 blind pensioners.

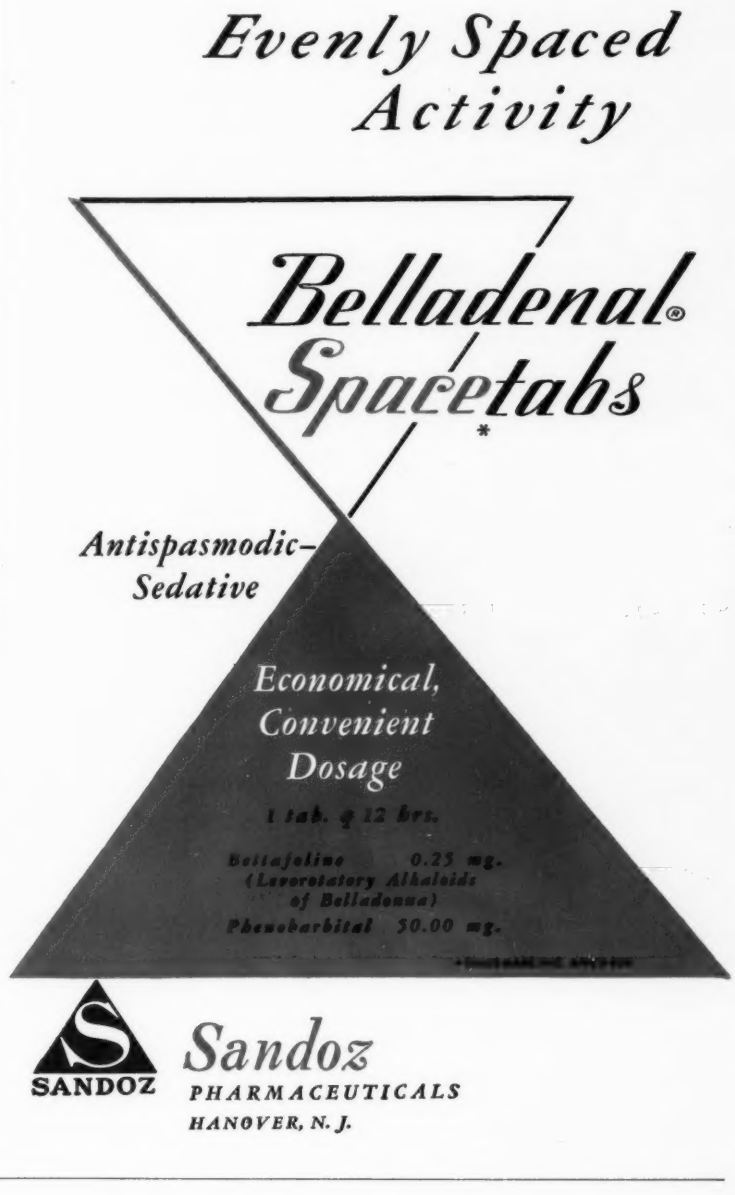
Questions asked most frequently about trachoma are given here with the answers available from the experience of many workers. Although much is known about the cause, the diagnosis, the clinical manifestations, and the prevention and treatment of this disease, not every question can yet be answered finally or completely.

What Is Trachoma?

Trachoma is an infectious disease of the external lining membranes (or conjunctiva) of the eyeball and eyelids. It causes an inflammation of chronic duration, characterized by burning, itching, excessive lacrimation, and photophobia. Generally insidious in onset, it develops usually at a slow pace and is somewhat resistant to treatment. The disease is localized strictly to the conjunctiva of the eyelids and eyeball and to the tarsus and the cornea. The pathological changes in the tarsus and the cornea are deep seated and usually irreversible when once estab-

*Reprinted from *Public Health Reports*, May, 1955.

†Dr. Siniscal since 1944 has been medical director of the Missouri Trachoma Hospital in Rolla, a service of the division of health, Missouri Department of Public Health and Welfare.



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lished. Persistent duration of inflammatory symptoms may lead to blindness, which results from corneal opacification and disintegration and, further, from cicatrized deformities of the eyelids and eyeball.

What Is the Cause of Trachoma?

The etiological agent is believed to be a large virus or inclusion body of the group which includes the psittacosis and lymphogranuloma venereum viruses. The inclusion body of trachoma is indistinquishable morphologically from that of the virus causing inclusion blennorrhea of infants and swimming pool conjunctivitis of adults (also called paratrachoma). Some workers have regarded the agents of these infections as belonging to the *Rickettsia* group, but Bengtson's[9] research has shown that the trachoma bodies are rather distinct from the rickettsiae. Generally speaking, the view is taken that the trachoma body is a virus, but the question has not yet been finally settled. The dividing line between bacteria and rickettsiae or between rickettsiae and viruses is not sharp.

A great majority of scientists now believe that trachoma is due to the organism discovered by Prowazek and Halberstaedter. In 1907, they described cytoplasmic inclusions, the presence of which in the epithelial cells of the conjunctiva and the cornea manifests the first detectable sign of the disease in the laboratory. Thygeson[10] has pointed out that these intracellular parasites are relatively large particles and that their life cycle is very similar to that of the psittacosis and lymphogranuloma venereum viruses.

There is need for more research on the causative agent or agents of trachoma. The exact nature of the organism will remain obscure until it is definitely isolated and successfully cultivated.

How Are the Eyes and Eyesight Affected?

If the infection is allowed to progress without treatment for several months or longer, a lymphoid infiltration in the conjunctiva and in the subepithelial tissue will result in hypertrophy and thickening of the conjunctiva and eventually in connective tissue formation and scarring. Even the tarsal plates are involved and may become buckled or deformed as a result of cicatrization. Follicles may or may not develop, but the absence of these should not rule out the presence of the disease.[11,12]

The most serious pathological complication of trachoma is considered to be the formation of pannus, which is a vascular invasion under the epithelium of the cornea. When pannus is allowed to progress centrally, the pupil becomes obscured by this veil-like opacity. Trichiasis, a condition of ingrowing eyelashes, results from cicatrization of the lid structures; it causes the eyelashes to rub against the cornea, thereby destroying the epithelium and predisposing to ulceration, perforation, and dense corneal scarring. Blindness may be due to diffuse corneal scars in general, or to pannus formation over the pupillary area, or occasionally to secondary uveitis following perforation of the chamber and prolapse of its contents, resulting eventually in phthisis bulbi.

Is Pannus Essential to the Diagnosis?

Although the presence of typical trachomatous pannus is a solid basis for making a diagnosis of trachoma, its absence does not absolutely rule out the diagnosis. Some observers[13-16] believe that any one or more of the following signs should be sufficient to establish a diagnosis of trachoma: (*a*) presence of typical follicles; (*b*) presence of pannus; (*c*) presence of cicatrization; (*d*) punctate depressions at the periphery of the cornea resulting from cicatrization of corneal follicles; (*e*) finding of the inclusion bodies.

A study by Rice and Smith[17] of the records for 1,154 cases of trachoma found that 88 percent showed the presence of pannus involvement of the cornea. According to Cosgrove,[7] a definite diagnosis of trachoma cannot be made without pannus unless a proved case has been seen in the same family. Recently, however, Julianelle and Smith[18] observed that approximately 37 percent of early trachoma cases do not show any pannus, and Mitsui[19] states that even a microscopic pannus can be absent in the earliest stage in some cases of trachoma. Mitsui observes that in Japan, microscopic pannus can be seen in about 50 percent of trachoma cases during the acute stage,

and that marginal punctate infiltration of the cornea can be seen in a smaller percentage of cases.

Cuenod and Nataf,[20] who stress the value of slit-lamp biomicroscopy in their monograph on corneal studies,[21] state that pannus is one of the most constant pathological signs of trachoma, but that they believe it possible for true trachoma to occur without pannus, especially the early stage. Nataf[22] states further that, in his opinion, it is possible for certain forms of the infection to occur without pannus but that diagnosis in such cases should be made with reservations. Nataf believes that trachoma may possibly occur in certain regions without pannus, but that in order to prove diagnosis in such cases, it would be necessary to detect, after regression, the typical scarring pathognomonic of trachoma.

Why Is Early Diagnosis Important?

As in other infectious diseases, early diagnosis and treatment of trachoma prevent its spread. Early discovery also makes it possible to prevent the advanced stages with their irreversible complications.

A clinical diagnosis of trachoma in its early stage is always difficult, since the classical landmarks of pannus, corneal infiltration, mature follicles, or cicatrization may not be present. The lack of agreement as to a definite differential diagnosis of early trachoma makes necessary a laboratory confirmation of the diagnosis whenever possible. However, because the virus is difficult to isolate or cultivate, a negative laboratory finding is unreliable.

Although the presence of inclusion bodies may clinch a positive diagnosis, their absence does not necessarily verify a negative diagnosis. The reason for this is that microbiotic or cellular findings typical of trachoma infection are not present throughout the length of the disease; it may be possible to find positive material from conjunctival scrapings early in the disease, but not always. In this connection a serologic test would be helpful. There is a clear-cut need for research on the serology and immunology of this disease.

The presence of several or all of the following signs plus a history of contact should make one strongly suspect that the diagnosis is early trachoma: excessive lacrimation with photophobia; papillary hypertrophy of the palpebral conjunctiva; a peculiar haziness of the lower cul-de-sac indicating diffuse infiltration therein; swelling and decreased rigidity of the upper tarsus; tiny filamentous symblephara in the upper fornices; large, discrete follicles; incipient pannus; and upper corneal infiltration. These signs may occur in other conjunctival diseases, but in an endemic area of trachoma, one would be remiss in his duties if he neglected to take cognizance of them.

Lindner[5] states that in areas where trachoma is prevalent, every case of slight, ordinary conjunctivitis may be beginning trachoma. He considers the most important sign of the first stage to be the peculiar haziness of the conjunctiva of the lower cul-de-sac. Kuo[23] also stresses the importance of general haziness of the lower cul-de-sac, together with incipient pannus, in making an early diagnosis. Tabone[24] discovered that in a series of cases of eye infection in which diagnosis was difficult, approximately one-half of those tentatively labeled conjunctivitis later proved to be real trachoma.

Is Trachoma Highly Contagious?

Trachoma is not highly contagious; otherwise, it would be more widespread than it is. Because trachoma is more likely to be transferred from one member of a family to another member than to contacts outside the home, it is sometimes referred to as a family disease, but it is not hereditary.

Important factors in the epidemiology of trachoma are general levels of living, particularly as they relate to sanitation and housing conditions, and geography and climate. Migration of infected persons into areas with high standards of domestic hygiene is not attended with danger, but such migration into areas with low standards of hygiene, where geographic and climatic conditions favor the disease, would tend to facilitate its dissemination.

Like other infectious diseases, trachoma is more likely to spread where unsanitary and overcrowded living conditions prevail. Although it is sometimes seen

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1. Wolfson, W. Q.: Mississippi Valley M. J. 77: 66, 1955.

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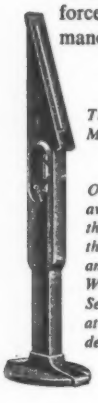

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in persons of exemplary habits of personal hygiene, it is more likely to take root in persons who are careless about such matters. The use of a common towel to wipe the face, for example, is an almost certain invitation to the disease. Improvement in economic status, with its concomitant improvement in sanitation and housing, will materially aid in the elimination of the disease.

In general, a high incidence of trachoma is observed in areas with a high mean temperature and little rainfall and in flood districts near the estuaries of large rivers. In all of these, sun, wind, and dust act as conjunctival irritants and are factors predisposing to the infection. In Missouri, trachoma is prevalent not only in the mountainous areas, where the climate is hot and the air dusty, but also in the cotton-growing lowlands of the southeastern delta, where the climate is humid and windy and the winds are dust laden.

Does Diet Have Any Effect on Trachoma?

According to Rice and his co-workers,[25] there is no evidence that a balanced diet supplemented with cod liver oil affected the course of trachoma in 18 untreated patients kept under observation for varying periods of time. However, it is the opinion of this writer, as well as that of other observers, notably Stucky[26] who made a great contribution to the prevention of trachoma in Kentucky, that inadequate diet and avitaminosis are contributory factors. At present, however, this concept must be regarded as unproved.

Glikson[27] states that his observations of over 25 years in Israel indicate that general nutrition is a decisive factor in an individual's immunity to this disease, and he adds that proper diet, including fresh milk and fresh, green vegetables, will shorten the duration of the disease or actually heal it. Murray[28] states that in South Africa adequate feeding supplemented by vitamin concentrates generally brings about a remarkable improvement within a few weeks even if no specific medication other than ablutions with saline is used. According to Bietti,[29] if there is any importance in nutritional factors, lack of animal proteins and of calories is more likely to play a role than avitaminosis.

Are All Races Equally Susceptible?

Generally speaking, all races are susceptible to trachoma in only slightly varying degrees. American Negroes seem not to acquire the disease, but miscegenates are not necessarily immune. Murray[28] reports that in South Africa, Negro tribes become afflicted with trachoma to a rather large extent. Extensive surveys indicate that the disease affects about 29 percent of the natives in that area.

In Missouri, the disease predominates among persons of northern European ancestry, notably Irish, Scottish, English, German, and Scandinavian. Their forefathers formed the forward ranks of the pioneers who moved westward from the coastal States, bringing the infection with them. The disease became established in these families and still flourishes in some of their settlement areas, notably in the southern half of the State. Negroes in the State do not acquire the disease.

It is thought by some observers that the dark-pigmented races, especially Negroes, are more immune to trachoma than the light-pigmented ones. Seemingly in support of this contention is the fact that when trachoma in an Egyptian passes over to a European, the disease manifests itself much more rapidly and has a much more devastating effect. Wilson[30] states that trachoma tends toward spontaneous cure more frequently among Egyptians than among Europeans. He observes further that some of the Egyptians suffer little from this disease and that the lesions are mild in comparison with the lesions among Europeans.

Studies by Thygeson[23] indicate that the trachoma bodies show a predilection for the superficial cells of the conjunctiva without involvement of the basal cells and that they tend to spare the pigmented cells. This possibly could explain the resistance in certain dark-pigmented races to trachoma and the more favorable development of the disease among them.

Bietti[32] states that there are racial differences in the sensitivity to the disease and that the Negro particularly is more resistant. He does not maintain that de-

gree of pigmentation is important, but rather that some innate, racial characteristic itself is responsible. In support of this theory, he mentions that among various African native tribes of equal pigmentation, some tribes develop the disease more severely and in greater numbers than others.

Rice[33] believes that the severity of trachoma varies considerably in different parts of the world and even within the borders of our own country. He states that trachoma probably does less damage among the Chinese, for instance, than it does among the white population of Missouri and Arkansas. Factors of immunity and adaptability may even be more important than factors of race.

To sum up, although trachoma is very widespread throughout the Near East and the Orient, the disease appears to be less distressing in natives of these regions than in Europeans and their descendants, among whom the prevalence is relatively low.

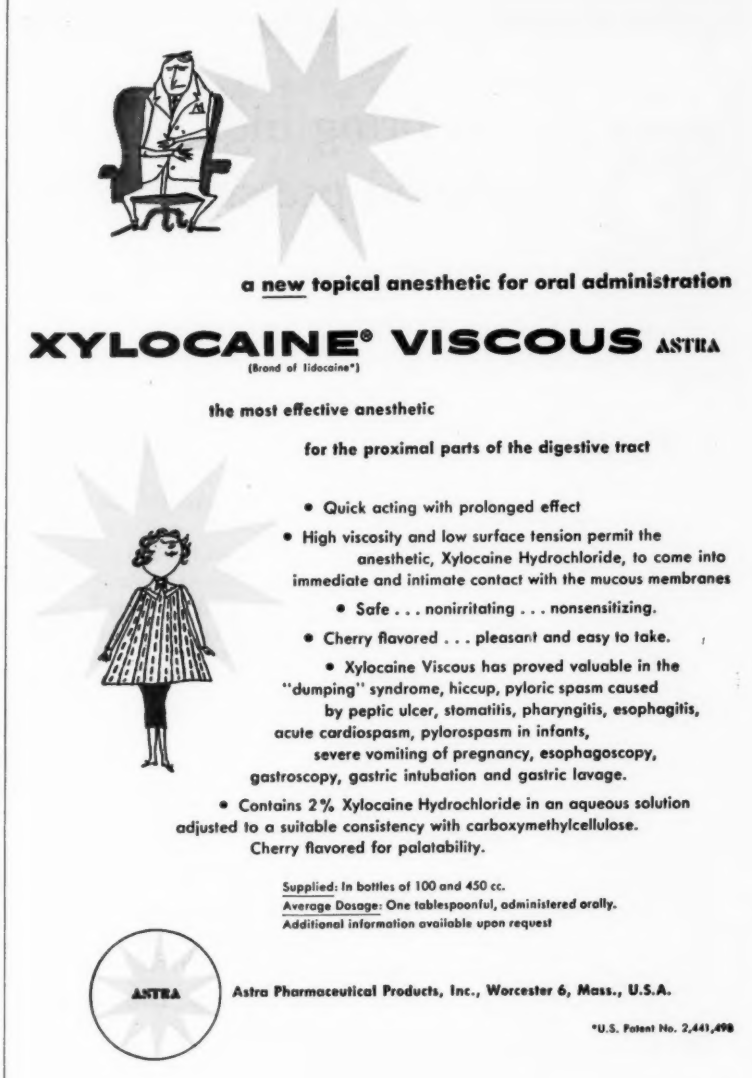
Why Does Trachoma Still Exist?

Trachoma still exists because it was so widespread in the ancient civilized world and because, too, it did not receive the advantages of a modern medical campaign until the past 3 or 4 decades. Before the advent of sulfonamides and antibiotics, treatment was largely empirical rather than specific.

Until recently, there was little organized attack against this disease abroad and practically none in this country. The idea of international collaboration in trachoma control has been in existence for almost 100 years, but only with the founding of the Anti-Trachoma League and the International Organization Against Trachoma in 1923 did the idea progress to action. Their quarterly publication, *Revue internationale du trachome,* provides an authoritative and dynamic organ for the consolidation and dissemination of knowledge and facts about the disease.

At present, mass treatment of trachoma has been started by the governments of many foreign countries, notably Formosa, French Morocco, and Tunisia, with the assistance of the World Health Organization, and initial favorable results are reported. Projects are being planned in Yugoslavia and Egypt, and surveys in Western Australia[34] and in South Africa[28] have emphasized the need for action in these areas.

In the United States, a program of attack against the disease was begun in the Appalachian area in 1913 by the Public Health Service.[35] During the next 11 years, one or more temporary diagnostic and treatment centers were set up in Kentucky, Virginia, West Virginia, Tennessee, North Dakota, Arkansas, Georgia, and Missouri, and in 1923 a permanent hospital and clinic center was established at Rolla, Mo., by the Public Health Service in cooperation with the State. In more recent years, the States of the trachoma belt have carried on the battle against the disease.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Can We Rid This Country of Trachoma?

During the past four decades, the prevalence of trachoma has decreased markedly.[36] The program against the disease has been changing gradually from treatment of active, florid cases to the practice of preventive medicine and treatment of early and late and terminal cases. The number of operations performed at the Missouri Trachoma Hospital for trichiasis, entropin, grattage, and lid deformities and the number of cases of trachoma found among field clinic patients are declining steadily.

In the other States of the trachoma belt, the disease is no longer considered a significant problem. Arkansas has discontinued its extensive case-finding program, but within the next few years it will survey former high-incidence areas to see whether the disease has actually been eradicated. In southern Illinois, once an area of high incidence, a marked decline in the number of cases was observed between 1949 and 1953. No active cases have been reported in the State since 1949. Kentucky discontinued its trachoma control program more than 4 years ago, and Oklahoma reports that the disease is now a negligible problem in areas where the incidence was once high. In Arizona and New Mexico, where an estimated 20 percent of the Indian population before 1938 was afflicted with the

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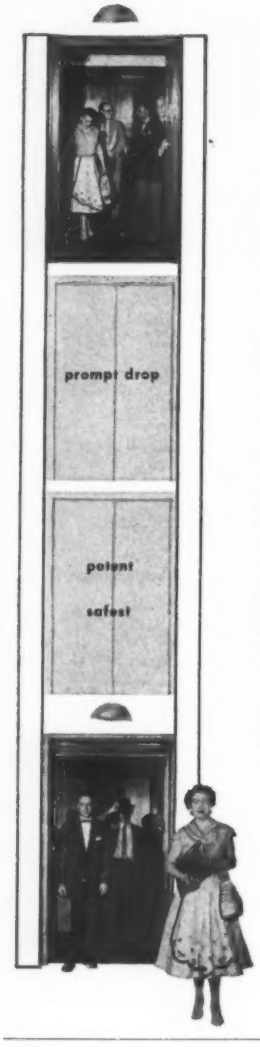

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disease, a 1952 survey of the Indian reservation residents in all areas except Albuquerque found only 2.6 cases per 1,000 population.

With continued organized attack against this disease, it should be entirely wiped out in the United States in time. Cooperation of independent ophthalmologists in trachoma areas and constant effort to teach the affected people good health habits will aid in reaching this goal. An improved standard of living and a rise in the general socioeconomic status are factors of importance.

What Treatment Is Given for Trachoma?

At the Missouri Trachoma Hospital and generally in this country, the infection is treated with sulfonamide medications. Sulfonamide solutions are used as drops in the eyes several times daily, and sulfonamide tablets administered orally and sulfonamide ointments used nightly are adjunctive therapeutic measures. If the infection is in the early stage, treatment may be completed in approximately 3 weeks; if it is of long duration, treatment may last as long as 2 or 3 months, or even longer if the disease has become established.

Sulfonamides have been used to treat trachoma since about 1938, and most authorities agree they are active against the trachoma virus. More recently, the antibiotics have been used with favorable results in some instances. In the experience of this writer, the sulfonamides have proved more effective than any other therapeutic agents, the antibiotics appearing to be of secondary help.[37]

Of the antibiotics, terramycin and possibly aureomycin seem to be most active against the trachoma virus.[38-43] Chloramphenicol is considered much less effective, and penicillin, bacitracin, and streptomycin seem to be of little or no value in uncomplicated trachoma.

Mitsui[43,44] reports that in Japan both acute and chronic trachoma respond well to terramycin treatment; but he observes further[45] that while in his opinion sulfonamides may not be the best agents against trachoma in these days of antibiotics, they certainly constitute a means of treatment in those cases that do not respond to antibiotics alone. Loe, who first used sulfonamides successfully against trachoma in 1937 among the American Indians in the southwest,[46] has stated that in his experience the antibiotics have not proved successful in the treatment of this disease in Arizona and New Mexico.

Cosgrove,[47] director of the Arkansas State health program for trachoma control, believes that sulfonamides are the most effective agents against trachoma, and that the antibiotics, including the broad-spectrum group, have no effect against this disease.

Does Trachoma Tend to Recur?

Trachoma is a disease of recurrences and relapses. The infection may have become dormant or latent so that not infrequently an arrested case may later show signs of activity. A recurrence may be due to the patient's having returned to an environment of smoke, dust, or wind, or to a mode of living not conducive to eye health.

Recurrences sometimes result from insufficient or inadequate treatment and occasionally from trauma, scarring, or possibly allergy. Some recurrences, of course, are due to reinfection from a member of the family who has not had treatment. All family members should be examined when trachoma is found to be present in one of them.

Is There a Definite Criterion of Cure?

As yet there is no definite criterion of cure in trachoma. However, a combination of all the negative signs—quiescence of inflammation, deturgescence of the pannus, resolution of the follicles, a smooth, pink conjunctiva with or without cicatrices, absence of inclusion bodies—indicates that the disease is arrested. Without any one of these signs, the patient cannot be considered cured, even if no active lesion is present.

Thygeson[48] points out that, when confronted with the problem of distinguishing healed trachoma from trachoma of low activity, microscopic examination is helpful only in a limited way. The finding of inclusion bodies indicates trachomatous activity, but inability to find them, even on repeated examination, does not necessarily mean a lack of a trachomatous activity.

Is There a Worldwide Clinical Pattern?

Although the cardinal signs of trachoma (follicle formation, pannus, cicatrization, and the presence of inclusion bodies) are universally accepted, the disease varies considerably in different parts of the world and would therefore seem to be polymorphic. According to Lyons,[40] trachoma may show variations in any of the following factors: (*a*) mode of transmission, (*b*) average age of onset, (*c*) clinical course and the resultant disability, (*d*) conditioning effect of secondary infection, (*e*) incidence of inclusion bodies at various stages of the disease, and (*f*) response to treatment with sulfonamides and antibiotics. Reports from workers in different countries illustrate some of these variations.

Lyons[50] states that in Egypt trachoma in its active stages causes surprisingly little disability; that gross thickening of lids is rare and the pannus seldom encroaches on the pupillary zone; and that photophobia and lacrimation are usually minimal and often absent. He adds that it usually is only the corneal lesions caused by neglected trichiasis in the late stage of the disease which lead to any serious reduction in vision.

Mitsui[45] of Japan declares trachoma to be an acute disease in its initial stage without exception. MacCallan[51] states that in Egypt and in eastern Europe, trachoma begins always with an inflammatory stage that continues for some time, but that in England the onset of trachoma in an acute or subacute form rarely occurs. He states further[12] that unmixed trachoma is always a chronic disease; that when it commences with acute manifestations or exhibits acute exacerbations, these are the result of superadded infections. Postic[52] of Yugoslavia observes that Mitsui's statement that all trachoma is acute in the initial stage must be taken to mean that such is the case in Japan, but not necessarily everywhere.

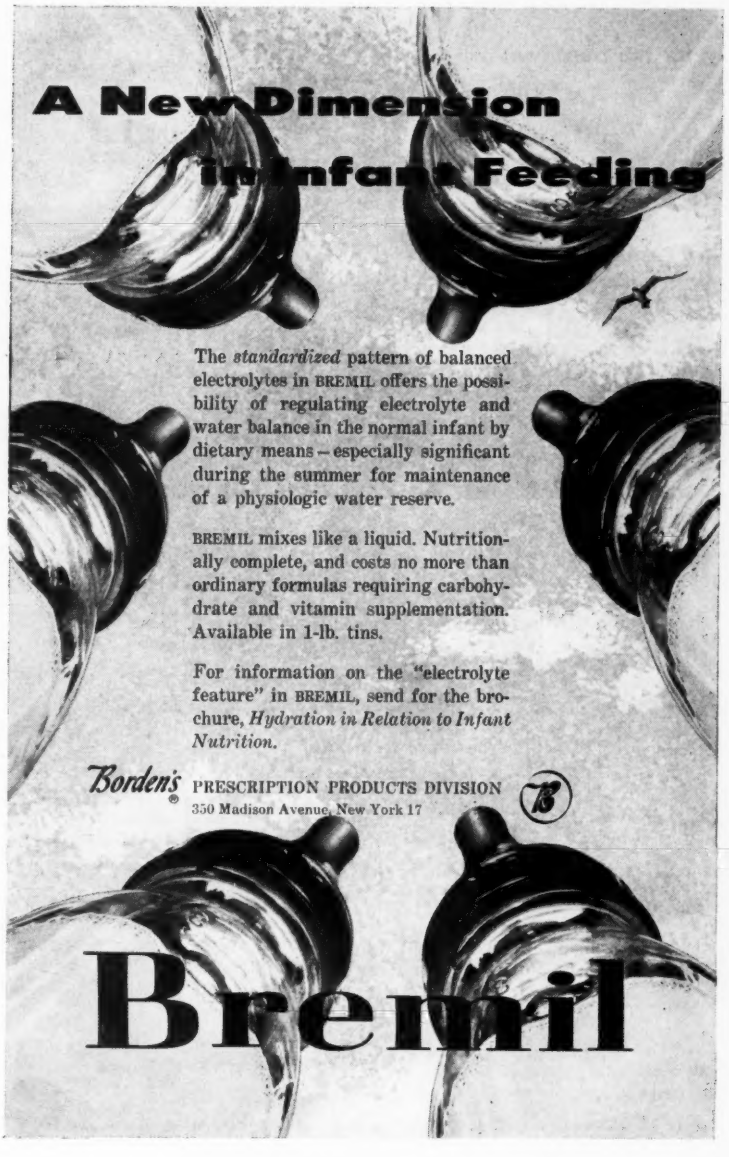
Gradle[6] states that trachoma in the United States varies somewhat with the characteristics of the population and the degree of sanitation present, but that entirely lacking is the onset of acute trachoma associated with ophthalmia, as seen so universally in Egypt. Lavery[53] states that in Ireland the disease usually starts insidiously, and that he has never seen an attack of acute trachoma. He reports, however, that he has observed attacks of acute conjunctivitis superimposed upon trachoma.

In Missouri, trachoma is usually a chronic disease, progressing slowly over a long period of time; acute trachoma may occur, but only occasionally. In my experience, the disease takes from one to several months to show early clinical signs after contact with a known infection has taken place.

Birch-Hirschfeld[11] believes that the first stage of trachoma with its inflammatory infiltration passes early and imperceptibly into the stage of scarring and that the follicles are not of essential importance for the progress of the disease; that they are found both in early and late trachoma and are usually invaded and broken up by strands of fibroblasts.

The first appearance of the follicles on the conjunctiva may vary as to location. MacCallan[13] notes that in Egyptians the granulations appear first on the tarsus, but in Europeans, in the cul-de-sac (retrotarsal fold of the conjunctiva). Fuchs[12] states that papillary hypertrophy is a predominant feature of the tarsal conjunctiva, and that the retrotarsal fold is the seat of formation for trachoma granules. Among the white population of Missouri, it is in the retrotarsal fold that follicle formation is most pronounced and where the follicles first manifest themselves. When trachoma is seen in the florid form, however, a generalized follicular distribution throughout the conjunctiva of both tarsus and fornix in both the upper and lower lids is found.

In many, but not all, parts of the world, trachoma is frequently complicated with secondary infections, commonly the Koch-Weeks bacillus and the gonococcus (in epidemic and endemic form), and less frequently the Morax-Axenfeld diplobacillus and the pneumococcus. The associated infections greatly affect the clinical picture as well as the prognosis and the infectivity of the disease. Nataf[54] of Tunisia includes trachoma with secondary infections always; he believes that pure trachoma exists very rarely and that numerous infections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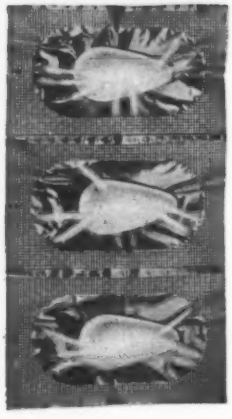

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are very often associated with it, the trachoma itself constituting the basic disease, the endemic and epidemic characteristics of which are conditioned by related disorders.

Do Associated Infections Affect Treatment?

Most authorities agree that the associated infections of trachoma have a conditioning effect on treatment. Lyons[30] states that antibiotics usually produce rapid and striking improvement in secondarily infected cases and have little or no immediate effect in uncomplicated trachoma. Bietti[36] points out that sulfonamide and antibiotic treatments may give different results according to the country in which they are administered. In Egypt, for instance, where associated infections are the rule, the response to treatment by various sulfonamides and antibiotics may well depend on the conditioning effect of these infections, as well as perhaps on other factors. Pages'[38] survey of experiments has shown that the trachoma-bacteria complex is characterized by a kind of mutual stimulation on the part of the associated micro-organisms, or, in other words, a synergic attack. In the United States, where the complicated trachoma common in Egypt is seldom seen, sulfonamides have generally produced more favorable results than the antibiotics.[37]

SUMMARY AND CONCLUSIONS

Trachoma is a disease that may vary considerably in different parts of the world. Its clinical phase may be conditioned by climate, environment, associated infections, race, and general health and living conditions. From a worldwide point of view, therefore, both sulfonamides and antibiotics are useful in therapy, although sulfonamides have been found more effective in the United States.

There is definite need for research on the serology and immunology of this disease and on its causative agent or agents. In this connection, a more simple and more direct diagnostic laboratory test would be of infinite value in making an early diagnosis. A more clearly defined clinical picture of trachoma as it occurs in various regions of the world would make it possible to correlate better the results of chemo-antibiotic treatment. A universally accepted classification of trachoma would help clarify many questions of medical, administrative, investigational, and international character.

Although trachoma has been virtually eliminated from many areas of the world, the job of complete and universal eradication is not yet accomplished. The combined efforts of research, mass therapy, and preventive measures, however, are producing increasingly favorable results. New facts and new ideas in trachomatology are being brought to light and are being set forth in the literature. These reports help to define the disease, to recognize its variations, to make possible early diagnosis, and to determine the therapeutic methods most suitable for coping with it regionally.

The outlook today for a worldwide attack on trachoma is more encouraging than ever before, particularly because of better understanding between ophthalmologists and trachomatologists here and abroad; and because, too, of greater recognition by governmental authorities of the importance of this disease in relation to the health, economy, and welfare of the affected people.

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UNPROTECTED ADOPTIONS*

Margeret A. Thornhill, M.S.

Special Consultant, Division of Social Services, Children's Bureau

Adoptions are popular. Witness the interest the word arouses, in the press, radio, TV, and in any conversation. This widespread interest reflects a drastic change in attitude during the past 2 or 3 decades. For the most part this change is all for the good. To be an adopted child now is to be accepted and approved, and perhaps this is even more true of adoptive parents. On the other hand, a few years ago, an adopted child was more likely to be suspect, pitied, or expected to be eternally grateful for his good fortune.

Popularity has brought with it problems of supply and demand. Since the great demand is for young white babies, the Children's Bureau's explorations were concerned primarily with these babies. The number of such infants available for adoption has increased in recent years, but the rate of increase has not kept up with the demand.

One of the outgrowths of this imbalance between the number of couples who want to adopt and the number of babies available is a practice commonly referred to as the "black market"—the selling of babies for adoption. There is room for wide difference of opinion and judgment on many aspects of adoptions. But the idea of selling babies is intolerable. Nevertheless, the practice continues.

Socially abhorrent as the black market is, there are other adoption situations in which money is not the prime factor, but which expose children to preventable hazards of indiscriminate handling.

When we started our explorations we had no evidence that the black market involved large numbers of babies. What was known about it was serious. But so were conditions surrounding other children being placed by individuals. What we needed most was more information.

I started out by visiting two areas where a black market was known to have existed—New York and Florida. I also visited Tennessee where the head of a social agency had placed children for profit; Chicago and Detroit where the public was aroused about the way in which some adoptions were being handled; and Wisconsin, where medical, legal, and social protections of adoptions were reported to be good.

I talked with directors of public welfare and their staffs, heads of voluntary adoption agencies, directors of maternity homes, public health personnel, judges, law-enforcement officials, doctors, and lawyers in private practice.

I also had access to a great deal of information gathered by a former assistant district attorney in New York City who took part in the prosecution of several black-market rings.

The Child Welfare League of America is conducting extensive research into the practices of adoption agencies. The results of its efforts will go a long way in making known the conditions that surround children and parents served by social agencies. Our concern has been primarily with those mothers and children who do not get to a social agency.

Four themes will run throughout this report:

1. Every adoption involves a threefold interest—the child, his natural and his adoptive parents. Measures that protect one protect the other two. And if the interests of one are neglected, the interests of the others are in jeopardy.

2. Knowledge of community resources in the hands of those people in a position to give advice assumes major importance.

3. Prompt handling of the immediate needs of the unmarried mother may determine whether she arrives at an acceptable solution to her dilemma. These needs are for medical care and for help with her own reactions of guilt and the remorse she is very likely to feel.

4. Every mother who relinquishes her child for adoption, every child adopted, every couple who adopts a child, needs medical, legal, and social services. These services cannot be given in isolation. Each becomes most effective when given in coordination and harmony with the other. And conversely, any one provided without the other two leaves the people involved exposed to hazards.

SUPPLY AND DEMAND

All of us know that the demand for babies exceeds the supply. No one has

*Reprinted from *Children*, September-October, 1955.

yet figured out how to measure the demand. A frequent estimate by social agencies is 10 requests to 1 placement. Probably this estimate includes duplications.

Unquestionably, there are people who want to adopt children who cannot get one through a social agency. There aren't enough babies who meet their requirements. There are other reasons too. One of them is age. More and more agencies are choosing to place infants with couples under 40. And most agencies place children with couples of the same religious and similar racial and cultural background. Some States require such practices.

Moreover, agencies place only a limited number of babies directly from hospitals. Many agencies are now setting the goal of 3 months for placement of all babies, but some couples choose an independent arrangement for a newborn infant in preference to waiting for an agency baby.

One group that has special difficulty getting children for adoption through an agency is composed of couples associated with the armed forces. These people often are not in one community long enough to make up their minds they want to adopt a child, file their application, have their home studied, receive a child, and complete the adoption before they are transferred. Because agencies are faced with many decisions as to how to use limited staffs in selecting homes for children under their care they usually choose to allocate staff time to couples with stable residences.

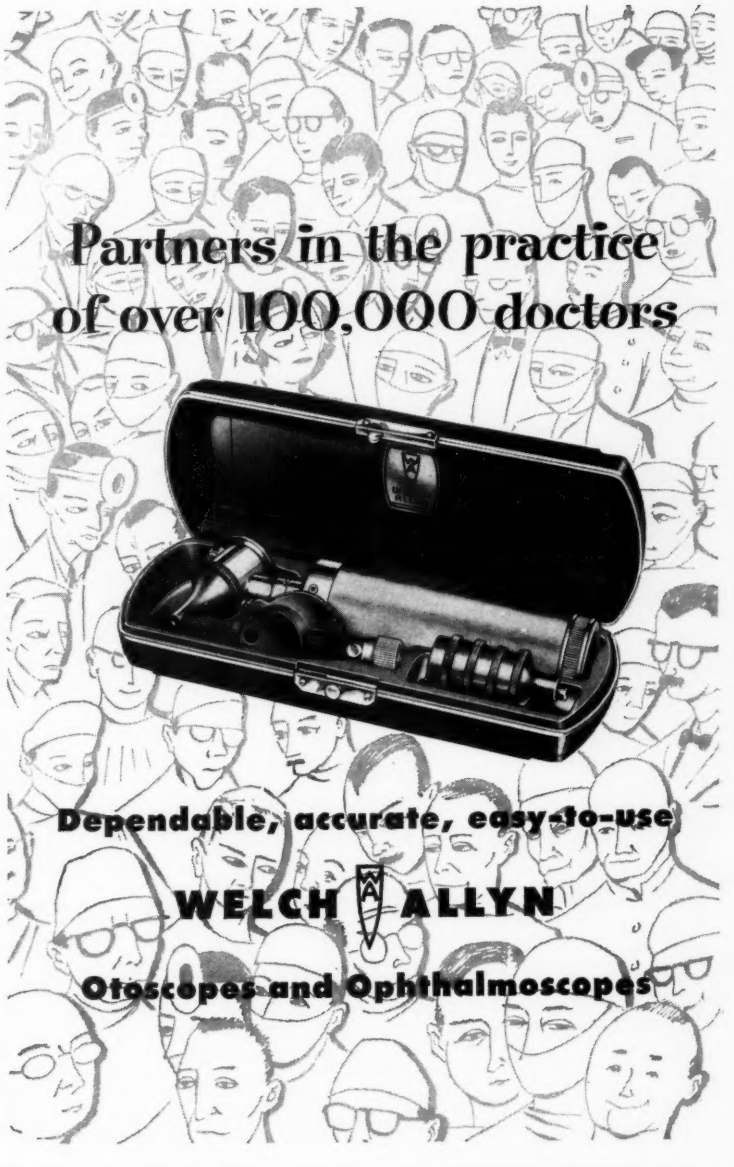
Probably a direct result of this practice is the increasing number of members of the armed forces who are adopting foreign children—as are many other American families. Intercountry adoptions again bring supply and demand into the picture. There are children in Europe and Asia who need new families but meeting the demand for children through this source of supply is not as simple as one man thought it could be. He wanted to charter a plane, fly about 60 babies to this country from Korea and pass them out to any couple who subscribed to his delivery service.

Adoption of foreign children can be the answer for some people. Our concern is how these people, children and parents alike, can be assured the same protections we want for adoptions within our own country.

THE UNMARRIED MOTHER

Any discussion of adoption immediately leads back to the unmarried mother. Seventy-two percent of the children adopted by nonrelatives in this country are born to unmarried mothers; 150,000 mothers each year give birth to a child out of wedlock; 54,000 are white; 96,000 are nonwhite.

What happens when an unmarried girl suspects she is pregnant? She may refuse to face the possibility and postpone confirmation by medical examination as long as possible. A considerable number of girls actually wait until time for delivery before they seek medical care.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The girl's first step toward advice or help is a vital one. Her actions are controlled to a large extent by the degree of her desire to keep her condition secret. Certainly her knowledge of community resources, or lack of it, will influence her selection of the person or agency to which she will turn first.

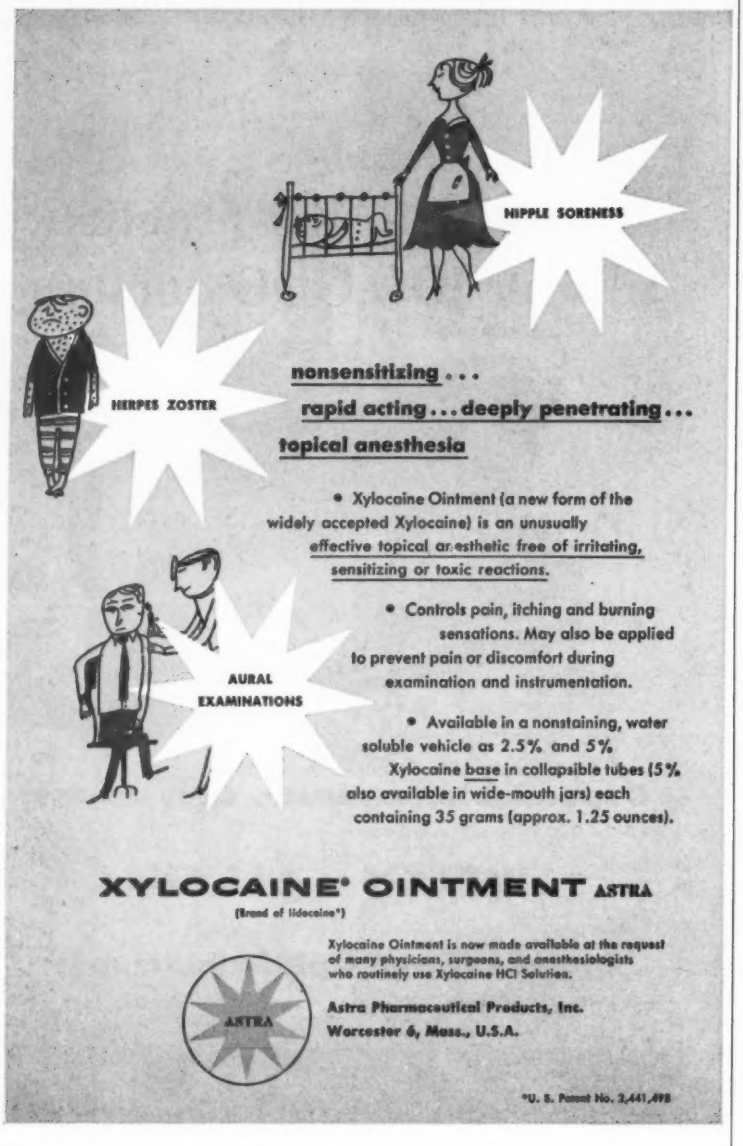
One of the first considerations for the girl seeking secrecy is to go where she is unknown. Many girls who leave home want to relinquish their children for adoption. They are looking for the answer to three questions: How to maintain themselves during pregnancy; how to obtain medical care; and what to do about the baby.

From the information available to us, unmarried pregnant girls are getting less medical care, and are getting it later in pregnancy, than married women.

A study made in 1954 in New York City of 154,165 mothers, 8,344 presumably unmarried, showed that by the end of the sixth month of pregnancy, 87 percent of the married mothers had made a prenatal medical visit, as compared with 47 percent of the unmarried.

Four percent of the married women had had no prenatal care, whereas 23 percent of the unmarried women had had none.[1]

Data on premature births and infant mortality suggest further correlation between marital status and medical care. A notably higher percentage of births out of wedlock occur outside of hospitals,[2] and higher rates of neonatal mortality—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deaths under 28 days are associated with nonhospital deliveries.[8]

Another important factor is the age of the mother at the time of childbirth. Mortality rates are considerably higher for mothers under 20 than for those between 20 and 24. Some 62,000 mothers under 20 years of age give birth to a child out of wedlock each year.

More research is needed to establish fully the relationship between marital status of the mother, and the extent and timing of the medical care she receives. That the unmarried mother is presently receiving less than she needs, and that there is a direct relationship between this fact and her unmarried status, seem clear.

The unmarried girl must face her own inner feelings as well as the outward reactions of society. If she must also face real difficulty in getting medical care and shelter, she is indeed under serious pressure. For those girls who do get to a social agency early and are offered the kind of help they can use, the pressure is considerably diminished.

Our immediate concern is with those girls who turn to individuals for help. Who are these individuals? They can be any friendly person who will listen to the girl's story. Many of them are people who, because of their profession or because of their position in the community attract the confidence of the unmarried girl—a clergyman, a doctor, a lawyer, a public-health nurse, a schoolteacher, or an employer. We have been told that often this first person is a druggist, possibly because the pregnant girl first thinks of abortion. What the pharmacists know about these girls is still one of our unexplored areas.

How do these people respond to an unmarried pregnant girl's request for help? How can they know how to advise her, and to guide her to resources that will help her handle all the problems involved in being an unmarried mother? Frequently, they do not themselves know of community resources. And all too often, community resources do not exist that will meet the particular needs of the particular unmarried mother.

COMMUNITY RESOURCES

Data are not available to show the nationwide picture of community resources. However, voluntary and public agencies invariably report inadequate funds and insufficient staff to offer medical care and social services needed by unmarried mothers and their children.

Residence requirements assume great importance in the whole adoption picture in view of the fact that a large number of unmarried pregnant girls leave their home States. Many States and local communities put restrictions on the use of their free services by nonresidents. These may take the form of requiring some clearance with the girl's home State, or some contact with her parents to see if they can assume financial responsibility. The girl's desire for secrecy may prevent her from accepting service under these conditions.

Some Community Chests have urged their member agencies to restrict their services to residents. Some agencies will accept the baby for adoptive placement, but cannot offer the mother any kind of maintenance other than in a maternity home or a wage home. Few agencies have money to pay for private medical care, even though the private physician may have referred the girl to them.

Behind these restrictions on the use of free services by nonresidents lie several explanations. Medical or any other kind of help, some people believe, should not be made easy for these girls, lest it encourage illegitimacy. Some communities fear that if they open their services to all comers they may attract too many and become overburdened with the expense.

One of the most frequent reasons for restrictions is the fear that the child will not be adoptable, and will become a long-time charge on the community or the State. So an effort is made to establish financial responsibility in the State of the girl's residence.

INDIVIDUAL PLACEMENTS

But agency practices *are* changing, as their knowledge and experience grow. Unfortunately, unmarried mothers and the community do not always know of these changes, and some agencies do not change very fast. If an unmarried mother thinks she will have to give information to an agency about her place of residence

and her family, or that she will have to continue some responsibility for the child until he is placed for adoption, an individual's offer of maintenance and medical care with no questions asked may seem preferable. What she often fails to realize is that with such an offer, she must pay a price, a price she is not prepared to evaluate at the time—her child.

We know that usually one of the first concerns of an unmarried pregnant girl is medical care. Naturally she turns to a doctor. The childless couple turns to a doctor for help in getting a baby to adopt. The doctor naturally thinks first of the well-being of his patient. The pregnant girl and the childless couple may be his patients. He may look upon adoption of the child as a way out of an embarrassing situation for the girl, and a way to happiness for the couple. What the child may need can be lost sight of in concentrating on the needs of the patients. We know that some adoptions arranged by family physicians are successful. However, I have been told of doctors who are obtaining babies for couples who are not their patients and whom they do not know.

I have had a number of doctors tell me of a couple who has come to them because they do not have children. The wife is distraught. Her desire for a child has become an "obsession." Doctors have told me they feared the wife would have a mental breakdown if she did not get a child. And they have helped her to get one.

The unmarried mother may be directed to a doctor known to welcome such patients because he has found that adoptive couples are more than willing to pay whatever professional fee is asked in order to get a baby. Similarly, unmarried mothers may be directed to certain lawyers who are eager to act as intermediaries in an adoption.

STATE LEGISLATION

State laws affecting children going into adoption are scattered throughout the statute books. Besides laws that apply to the procedure of an adoption petition through the court, at least four other kinds relate directly to adoption and to the three parties to it:

1. Laws relating to voluntary and involuntary termination of parental rights.

2. Laws relating to relinquishment and the right to consent to adoption.

3. Laws relating to the licensing of child placing agencies, foster homes, and maternity-care facilities.

4. And laws specifying who can and who cannot place a child for adoption.

Every State has developed its own particular legislative framework surrounding adoptions. The points at which the forces of protection of children are brought to bear vary with States and communities. In some communities the case of every unmarried pregnant girl who is a minor is subject to review by the court or some authoritative agency to determine whether she is in need of special protections. Some States seek to protect the child born out of wedlock by requiring that the birth be reported to the department of welfare.

Other States bring their protective forces to bear at the time the child is placed in the adoptive home by requiring that the placement be made by a person or agency licensed to do so. Others require investigation after the adoption petition has been filed and after the child may have been in the home some months.

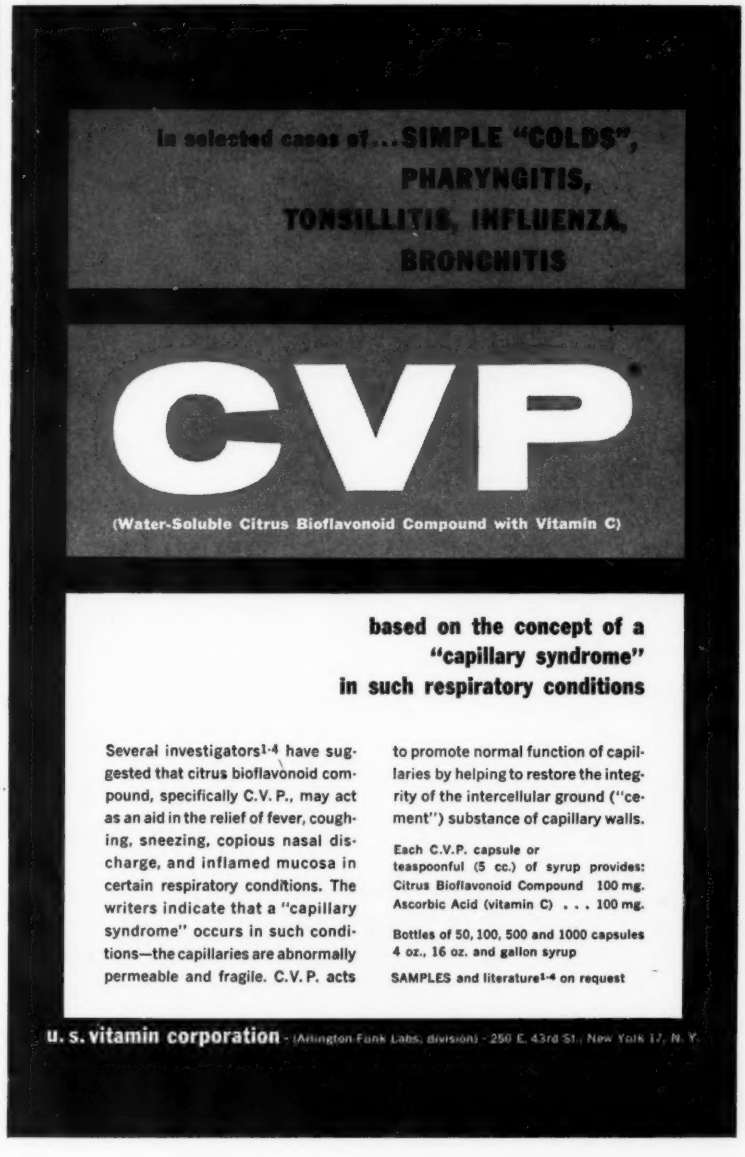
Obviously, with all these variations in State laws regulating adoptions, the opportunity for evading any one or all of them is open to any person who wants to do so—especially where there is no agency that has been designated to enforce the protections.

Take for example, the filing of adoption petitions. Some States require that these be filed in the petitioners' State of residence. Usually an accompanying law requires a social study of the petitioners' home. Such laws give importance to establishing the suitability of the couple to adopt a particular child.

Other States have no such requirements. Any couple may file a petition to adopt a child without regard to their residence. This means that a couple found unsuitable to adopt a child in their home State might obtain one in another, file their petition, and return home with the baby.

AREAS FOR CONSIDERATION

While many honest differences of opinion exist as to the criteria for selecting adoptive parents, most people would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agree that some couples who want to adopt a child are not suitable prospective parents. Serious consideration must be given to how children can be protected from adoption by couples who can neither offer the child a reasonably happy future nor achieve happiness for themselves by this route.

One desirable protection for all parties in an adoption is that, once it has been completed, the child not be disturbed by having two sets of parents. The safest way to prevent this is to provide for termination of parental rights and placement of the child in such a way that the natural parents do not know where the child is placed. Some statutes prohibit placement by other than an authorized agency, but exempt the mother from this prohibition. This, while recognizing certain parental rights, has inherent dangers for all concerned and calls for a careful examination of the philosophy of the law to see how it can insure the rights and responsibilities of all—the child, his natural and his adoptive parents.

What often happens is that, despite a prohibition against individual placements, an unauthorized intermediary takes over, ostensibly acting for the mother. Often a person who knows of an unmarried mother seeking to relinquish her child and a couple wanting to adopt one acts as the arranger between the two parties. The intermediary often defends this practice on the grounds that he is protecting the child and his adoptive parents. This is one of many situations in which the independently arranged adoption is only made by evasion, manipulation, or actual violation of the law.

Two kinds of situations are being reported with sufficient frequency to give reason for grave concern. One is the registration of the unmarried mother in the hospital under the name of the adoptive mother. Presumably the child is reported as being born to the "adoptive" mother and therefore is never adopted. This means falsification of the birth record. The child is left without a clearly defined legal status. How can the parents live but in fear that the falsification will become known? No matter how much a child is treated as the parents' own, the fact that he is not is known to the people in whom the child is most likely to sense fear and uneasiness—his parents. Such children are very likely to learn of their status sooner or later. Experience is overwhelmingly in favor of the adopted child learning from his adoptive parents his status in the family.

Another kind of legal situation with inherent problems is that of the married woman whose husband is not the father of her child. Usually such a child is recognized as legitimate unless proved otherwise, and therefore the husband's consent to the adoption is required. If the mother does not want her husband to know about the child and wants to release him for adoption, she faces legal as well as emotional problems. Women in such difficulties have turned to the black market and to others who are unconcerned with such legal requirements. Certainly the best legal and social thought is needed to find a way of dealing with such situations.

Many abuses have been reported around a mother's relinquishment of her child. Some of the most vicious cases that have come to light from the black market are those in which a girl has been frightened or coerced into signing a relinquishment before or immediately after delivery.

CONTESTED ADOPTIONS

Frequently newspapers carry stories of contested adoptions. The natural or the adoptive parents are dissatisfied with the arrangement. These cases are tragic in the damage and hurt they cause. They are comparatively few out of the total number of adoptions, but there are many more cases in which great harm is done that do not make the headlines.

A young girl from a small town in Kentucky went to Detroit when she found she was pregnant. She told her family she had a job there. She found a friendly druggist who could not help her with her first question, but offered to get her to a doctor who would give her medical care. The doctor assured her of maintenance, medical care, and sufficient money to start her on her way after the birth of her child. He knew of a couple who would pay all these expenses if they could have the baby.

Detroit rigidly enforces a law that in any independent adoptive placement the home must be studied before the child is

placed in it. This means that the baby must first go into a temporary boarding home until a report is made to the court on the suitability of the adoptive home.

The girl delivered her child, was visited by the attorney of the adoptive couple, left the hospital, signed a relinquishment, and returned to her home saying only that she did not like working in Detroit.

The baby was taken to a temporary home to await the report to the court. In the meantime, the adoptive couple's own doctor examined the baby and found him to be abnormal. The couple refused to take the child. The attorney got in touch with the girl at her home and told her she would have to come for her baby. Even though she had signed a relinquishment, she was still legally responsible.

Sometimes the situation is reversed. The adoptive couple takes the baby and is extremely happy with him. It is the girl who changes her mind. If her rights have not been terminated, and if she knows where her child is, she may contest the adoption, with tragic results for everyone concerned.

Can such contested adoptions be prevented? For the most part, yes. If the mother is helped with her emotional problems at the time she must make the decision to keep or to give up her child, she is very likely to make a decision she can live with.

One of the most frequently reported characteristics of individuals who arrange adoptive placements is their lack of concern with the future of the natural mother. Besides humanitarian interest in helping girls in trouble, another important reason exists for being concerned about their future. Most of them are in the early years of their childbearing period. Most of them will have more children, hopefully in wedlock. The community has a real stake in helping these girls become stable wives and mothers.

Federal legislation has been suggested aimed at preventing and controlling the black market. These proposals would make it a Federal offense to transport a mother or a baby across State lines for the purpose of selling the baby for adoption.

The little specific information we have on black-market operations indicates that the interstate movement of the mother is voluntary and not controlled by the black marketeer. The transporting of the baby is by the adoptive couple. Therefore, the proposed legislation would not be effective in controlling the activities of the intermediary. True, one of the black-market rings that was exposed and prosecuted involved the transporting of babies from Florida to New York, but we have no recent information that any such rings are in operation.

One kind of suggested Federal legislation would make it an offense to transport a baby interstate in violation of the laws of the States involved. Where State laws are weak, such a Federal law would be ineffective. It would, however, keep responsibility within the States, and might be used to urge States to strengthen their laws.

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*Combes, F. C. & Canizares, O.: New York St. J. Med. 52:706, 1952; Marsh, W. C.: U. S. Armed Forces M. J. 1:1045, 1950.

A COMMUNITY RESPONSIBILITY

Inherent in the effectiveness of the law is the community's attitude toward it. If the community does not know about the law, or knows about it but does not accept it, or accepts it but will not give money for the services required, the protections provided by the law can have little effect.

Twenty thousand children a year are placed with nonrelatives by individuals for adoption. We do not know how many of these children lack adequate protections. We need to find out. But even more we need to find out what protections are essential and how they can be obtained.

Until the professions which are directly concerned can arrive at a consensus of what medical, legal, and social protections are needed, there seems little hope that the black-market and other unprotected adoptive placements can be prevented.

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DIABETES MORTALITY IN RECENT YEARS*

The death rate from diabetes in the United States, adjusted for changes in the age composition of the population, has decreased somewhat in recent years—from 15.4 per 100,000 in 1949† to 14.0 in 1953, or by 9 percent. A further improvement is indicated by the reduction in the crude death rate from the disease between 1953 and 1954; thus far, in 1955, the death rate has remained at the level of a year ago.

The largest decrease in the age-adjusted death rate from diabetes occurred among white females; their rate fell continuously from 18.0 to 15.7 per 100,000, or by 13 percent, between 1949 and 1953. The corresponding reduction among white males was 7 percent, but this reflects merely the decrease between 1949 and 1950. In the nonwhite population, the age-adjusted death rate shows no appreciable change for the period under review.

The factors underlying these varying trends are quite complex. Of considerable importance is the fact that general health conditions in the country have been exceptionally good in this period, and there has been relative freedom from severe and widespread outbreaks of respiratory disease. Since the impact of serious infections is greater on diabetics than on most persons with other chronic disorders, the relatively low incidence of acute respiratory disease is reflected in the mortality from diabetes. Moreover, the advances in chemotherapy have been of great benefit in the management of such infections among diabetics.

The trend of the diabetes death rate in recent years also gives some indication of the improvement in control of the disease resulting from the increased emphasis on early diagnosis and from advances in treatment. Further gains along these lines can be achieved. Efforts to diagnose the disease early are being intensified. For example, widespread diabetes-detection campaigns have been organized under the auspices of the American Diabetes Association and its affiliate organizations. Popular education regarding the disease may stimulate the public to have medical examinations regularly and to seek prompt medical attention for symptoms of the disease. In like manner the widespread educational program on the dangers of obesity, of particular significance in relation to diabetes, may be helpful in preventing or postponing the onset of the disease in many cases.

Diabetes mortality shows a fairly consistent geographic pattern. The highest crude death rates from the disease are found in a belt of States extending westward from Massachusetts to Michigan and southward along the Atlantic Coast to Delaware. Death rates are generally below the national average in the South and the Far West, while rates of intermediate magnitude are recorded in the North Central States. The level of the recorded death rate from diabetes in the various States is affected by a number of factors, such as the age and color composition of the population, the proportion living in urban areas, and the amount and quality of medical care.

Although the mortality from diabetes now accounts for less than 2 percent of the total deaths in the population, the disease is more important than is indicated by this low proportion. Deaths ascribed to diabetes now constitute probably less than half of the total among diabetics. Most of the deaths among them, whether or not ascribed to the disease, are accounted for by arteriosclerotic complications.

Many deaths from the disease can be prevented. A study of the experience among Metropolitan Life Insurance Company policyholders with diabetes who died recently showed that 5 percent of the deaths were due to diabetic coma and 6 percent to diabetic gangrene. These direct complications of the disease are much less frequent in adequately treated diabetics. Thus, the recent experience among patients treated at the Joslin Clinic in Boston showed that less than 1 percent of the deaths were due to diabetic coma and only 2½ percent of the deaths to diabetic gangrene. Better medical supervision and management of the disease can add to the well-being and longevity of diabetics.

*Reprinted from *Statistical Bulletin*, Metropolitan Life Insurance Company, October, 1955.

†Because of changes in the procedure of classifying causes of death with the introduction of the Sixth Revision of the International Lists of Diseases and Causes of Death, the death rates from diabetes beginning with 1949 are not comparable with those in prior years.

CANINE LEPTOSPIROSIS AND PUBLIC HEALTH*

By Robert J. Byrne, D.V.M.†

Since the first report of canine leptospirosis in the United States in 1937,[1] the disease has been found with increasing frequency. Today, the effective detection and treatment of canine leptospirosis must be regarded as one of the most important problems challenging the veterinary profession.

Leptospira canicola, the organism responsible for the canine disease, can be transmitted to man by various methods. The resultant illness is a serious one and should be considered as a public health problem of importance. The various aspects of *Lept. canicola* infections necessary to an understanding of the problem will be considered here.

HISTORY

The first detailed description of the disease now believed to be human leptospirosis dates back to 1886 when Weil described the clinical disease syndrome which still bears his name. The disease was characterized by icterus, fever, hemorrhagic tendency, and a high mortality resulting from renal, hepatic, and vascular failure.

The search for the etiological agent of this so-called "Weil's disease" ended when Japanese[2] and European[3] workers independently isolated a spirochete, later designated as a *Leptospira* by Noguchi.[4]

The first evidence of an animal-host carrier was obtained by Miyajima in Japan, who demonstrated that spirochetes were present in the tissues of field mice.[5] The significance of such leptospiral carriers was dramatically illustrated in the rat infested trenches of World War I where over a hundred cases of human leptospirosis occurred.[6] Since those early reports, new leptospiral hosts have been found, including almost every type of domestic animal, most rodents, and many wild animals. In addition to *Leptospira icterohemorrhagiae,* numerous other leptospiral serotypes pathogenic for animals and man have been identified and differentiated from each other by serologic techniques.

In 1931, Klarenbeek and Schuffner, in the Netherlands, isolated leptospires from the urine of a dog affected with nephritis.[7] The leptospiral strain was found to differ, serologically, from *Lept. icterohemorrhagiae* and was designated as *Lept. canicola.* Shortly thereafter the first human infection with *Lept. canicola* was reported in that country.[8] This leptospiral serotype was isolated from dogs in the United States by Meyer and associates in 1937,[9] and the first human case in this country was reported in 1938.[10]

ETIOLOGY

Members of the genus *Leptospira* are delicate filamentous organisms, tightly coiled, and usually hooked at both ends. They are generally 6 to 14 microns in length, but individual organisms measuring up to 40 microns have been observed in laboratory cultures. They are difficult to stain and cannot be observed in the living state except by darkfield or phase-contrast microscopy. These spirochetes can be propagated in special laboratory media in which they may remain viable for a year or longer. Viability, as well as pathogenicity for certain animal hosts, may be maintained by serial passage in hamsters of infective blood or tissues. Since one leptospiral species cannot be differentiated from another by morphologic, cultural, or biochemical methods, classification is based on serologic methods involving cross-agglutination and absorption techniques.

EPIDEMIOLOGY

The widespread distribution of canine leptospirosis in the United States has been substantiated by numerous epidemiological surveys. The reported incidence has varied from 3 to 38 percent depending on the diagnostic technique used and the age of the dogs surveyed.[11-13] Man and other susceptible hosts can become infected by direct contact with contaminated urine from infected dogs, by consumption of food or water so contaminated, or by close contact with surface water in which pathogenic leptospires are present. Infection can occur by entry of these organisms through a skin abrasion or cut, or through the unbroken mucosal surfaces of the conjunctiva, pharynx, or nasal passages.

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†Dr. Byrne is with the Grayson Research Laboratory, University of Maryland, at College Park. This address was delivered at Pennsylvania's Third Annual Health Conference in August 1954. At that time, Dr. Byrne was with the Army Medical Service Graduate School, Washington, D.C.

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Pathogenic leptospires are harbored in the kidneys of rodents and other mammalian hosts. These organisms display a characteristic affinity for the renal cortex where they may be found nesting in the lumina of the convoluted tubules. From these foci they may be excreted in the urine for long periods of time. Should such organisms find their way into a favorable environment—such as damp soil or a small body of fresh water—they may survive for as long as 22 days.[14] Dr. D. W. Johnson of Australia in a personal communication reports survival of the organisms for as long as 7 weeks.

The possibility of transmitting this disease from dog to man is readily apparent. Dog handlers, kennelmen, and veterinarians are most subject to infection from exposure to contaminated urine. Cuts, abrasions, or scratches of the hands provide suitable routes of entry for these organisms. The fact that in many instances a dog's urine may be acidic is no assurance that infections cannot be acquired in this manner. Despite the preference of leptospires for an environment having pH values ranging from 6.8 to 8.6, these organisms are able to survive for short intervals in acidic urine, and upon invading a new susceptible host could multiply and produce disease.

Human *Lept. canicola* infections associated with swimming or wading in surface waters contaminated with dog urine have been reported.[15] Of possibly greater epidemiological significance is the transmission of *Lept. canicola* infections from dogs to larger domestic animals and subsequent development of leptospiruria in these new hosts. The relatively large volume of infected urine excreted by these animals, cows and swine, for example, poses a far greater threat in the contamination of surface water than that excreted from dogs.[16]

A constant reservoir of infection is maintained in the kidneys of the many urinary shedders among the canine population. This factor, coupled with the characteristic greeting behavior of dogs, insures the sustenance of *Lept. canicola*. Presumably, *Lept. icterohemorrhagiae* infections in dogs are contracted in this manner or when dogs kill and eat infected rats or other rodents.

The dog has been proved a host to several distinct leptospiral strains, some of which have yet to be reported in the United States. *Lept. canicola* has been universally incriminated as the most frequent leptospiral parasite of dogs, although occasional cases of *Lept. icterohemorrhagiae* infections have been reported. In the United States, serologic evidence indicates that about 90 percent of all canine leptospirosis involves *Lept. canicola* and 10 percent are probably due to *Lept. icterohemorrhagiae*.[17]

Other leptospiral strains which have been reported in dogs are *Lept. pomona*, the prinicipal causative agent of bovine and porcine leptospirosis in the United States; *Lept. hebdomadis* and *Lept. autumnalis*, the latter two serotypes being found most frequently throughout the Far East. *Lept. australis* A, *Lept. medanesis*, *Lept. bataviae*, *Lept. grippotyphosa*, and *Lept. sejroe* have all either been isolated from dogs or there is serologic evidence suggesting their existence in this host. The importation of dogs from many parts of the world carries with it the possibility that new leptospiral strains may be introduced in the United States, thus presenting new disease problems among both animals and man.

CLINICAL ASPECTS IN ANIMALS

Added to the other pathogenically unique effects which characterize leptospirosis are the particular syndromata produced by this disease in dogs. Based on experimental evidence and field observations, it is impossible to predict consistently the precise clinical response to leptospiral infection. Reactions following inoculations with living leptospires are variable—a dog may remain completely asymptomatic, or become jaundiced, develop a renal syndrome, or suffer a peracute fulminating disease resulting in death.

Acute canine leptospirosis resulting in either a severe icteric or hemorrhagic disease has been reported in epizootic proportions.[9] The disease may appear in kennels and result in a high fatality rate, particularly among young dogs. These outbreaks are characterized by the high incidence of jaundice in affected animals from which the common designation, "canine yellows," has been derived.

An animal surviving the acute disease or experiencing a mild subclinical infection almost invariably becomes a urinary carrier. The apparent effect of the extended nesting of leptospires in the kidney tubules of dogs is a tissue response manifested finally by the development of interstitial nephritis. Should this process continue over a prolonged period of time, severe renal dysfunction may result with the development of a uremic syndrome known as "canine typhus" or "Stuttgart disease."

Numerous attempts have been made to outline the symptomatology of canine leptospirosis and to define and describe various forms in which the disease may manifest itself. These descriptions usually include a hemorrhagic type and a uremic type. Bloom[18] comments: "The clinical manifestations of canine leptospirosis are extremely variable and may be absent, latent, subclinical, atypical, mild or severe. The clinically obvious disease may be peracute, acute, subacute, or chronic."

It would be equally accurate to describe the clinical disease from the bacteriological and pathological standpoint. This has been done by Stuart,[20] who mentions three stages:

Invasive. After gaining entry, the leptospires multiply and find their way to all organs of the body. Direct isolations from the blood may be made at this time. This is the period of febrile illness and is generally accompanied by lethargy and anorexia. Jaundice, if it occurs at all, usually appears immediately at the end of this period. Serum titers do not usually reach significant levels at this stage.

Primary renal. The invasive stage may be followed a week later by a primary nephritic stage, which may be the first stage to be clinically detected. During this period leptospires have found their way to the kidney tubules, whereupon the spirochetes may be isolated from the urine. A diffuse or focal round-cell infiltration characterizes the interstitial nephritis that results from the kidney infection. The uremia which commonly occurs from this stage may result from nephron obstruction or other pathological changes, not clearly understood. Apathy, stomatitis, and thirst are the chief clinical symptoms manifested by affected animals. The blood-urea nitrogen level is generally elevated, and the leptospiral agglutination titers of the serum reach a high level.

Secondary renal. The primary nephritis stage may proceed, after a lapse of several months or years, into a secondary nephritic stage. This stage is characterized pathologically by chronic interstitial nephritis accompanied by fibrosis and clinically by uremia. Leptospiruria is rarely found, and it must be concluded that the kidney damage is not associated with a continuing infection. The serum agglutination titers tend to be of a low order during this stage.

CLINICAL ASPECTS IN HUMANS

The basis for naming the human leptospiral diseases has included such considerations as geographic location or epidemiological and clinical similarities associated with infections by specific leptospiral strains or serotypes. For example, Weil's disease is associated with *Lept. icterohemorrhagiae* infections, and *Lept. grippotyphosa* is the etiological agent of mud fever. In Japan, akiyami, or autumn sickness, is caused by *Lept. autumnalis*. *Lept. canicola* infections in man have been described as canicola fever. Within some of these groupings extreme variations in the clinical manifestations are frequently found. The protean nature of the human leptospires is exemplified by the various symptoms of *Lept. canicola* infections.

As with other leptospiral infections, the onset of canicola fever is quite sudden and characterized by chills and fever, severe headache, stiff neck, and intense muscular pains.

In general, it is a relatively mild disease, but on occasions it may simulate classical Weil's disease and result in death. A grippe-like form of canicola fever has been described in which such respiratory symptoms as cough and bronchitis are observed. Ocular manifestations in the form of uveitis may occur long after the febrile stage of this disease has passed.[20]

The ease with which leptospiral infections can mimic other diseases was demonstrated in an outbreak affecting 25 children in Georgia.[16] These children went swimming in a small stream which was polluted with the urine of cows and

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pigs upstream and developed a disease initially diagnosed as dengue. It was not until the epidemiological and laboratory aspects of the outbreak were completed that *Lept. canicola* was established as the etiological agent.

Rosenberg,[21] in his review article, states that approximately 50 percent of all cases of canicola fever are accompanied by meningeal symptoms. A study by Beeson and Hankey[22] indicated that 8 to 10 percent of all cases of aseptic meningitis are leptospiral in origin, and half of that number were canicola infections. This figure agrees closely with data obtained by other American and European investigators. Reference has been made to the resemblance of leptospiral meningitis to early poliomyelitis.[23] Woodward[24] points out that leptospirosis must be considered in the differential diagnosis in any disease in which lymphocytes are found in the spinal fluid—such as lymphocytic choriomeningitis, mumps, herpes, poliomyelitis, Coxsackie disease and the various neurotropic encephalitides.

LABORATORY DIAGNOSIS

The reported incidence of leptospirosis often varies with the awareness of the disease. To confirm a diagnosis of leptospirosis in either man or animals, adequate laboratory support is essential. At present, this type of support is not always available. There are relatively few laboratories in the United States which have the necessary equipment and trained personnel essential to carry out this task. The laboratory diagnosis of leptospirosis is based either on the demonstration of the organism in the blood, cerebrospinal fluid, or urine during the course of disease, or by a rise in antibody titer between serum specimens taken during acute and convalescent phases, or by pathological findings at autopsy.

Leptospires appear regularly in the circulating blood during the first week of disease and may be isolated at this time by directly inoculating a few drops of blood into appropriate laboratory media. These cultures are subsequently examined at 2-week intervals by darkfield microscopy. If no leptospires can be demonstrated in the media after 28 days, cultures may be discarded as negative. Such techniques may also be employed in isolating leptospires from cerebrospinal fluid during the early stages of infection. It is difficult and often dangerous to base a diagnosis of leptospirosis on the direct darkfield examination of blood. The presence of artifacts in the form of fibrin shreds or other blood constituents may lead to a false diagnosis. Conversely, leptospires are ordinarily present in such small numbers as to be missed by direct examination.

The leptospiruric phase of the disease usually commences about 12 to 14 days after the onset of symptoms. The same precautions must be applied to the direct darkfield examination of urine as were cited regarding blood, although on occasions, large numbers of leptospires have been directly observed in the urine of dogs and other animals.

Attempts to isolate these spirochetes from urine are best made by inoculating freshly voided or catheterized urine samples intraperitoneally into young guinea pigs or hamsters, bleeding these animals by cardiac puncture 4 to 6 days after inoculation and culturing media with their blood. These cultures are then handled in the same manner as those initiated directly from the patient's blood. Cultivation of leptospires directly from urine is usually not feasible, because of bacterial contaminants.

Serologic diagnosis is based on the demonstration of a rise in antibody titer between serum specimens drawn during the acute phase of disease and during convalescence. In the laboratory at the Army Medical Service Graduate School, a modification of the Schuffner-Mochtar agglutination-lysis test employing a battery of viable leptospiral type strains is used.[25] In making a serologic diagnosis of leptospirosis, the value of paired serum specimens cannot be stressed too strongly. Single serum specimens, particularly those with a low antibody titer, are often of little value unless accompanied by a complete clinical history. A low serum titer may indicate a past leptospiral infection or a new infection in the early stage of antibody development.

Complement fixation has been employed in the diagnosis of human leptospirosis infection.[26] Although it has

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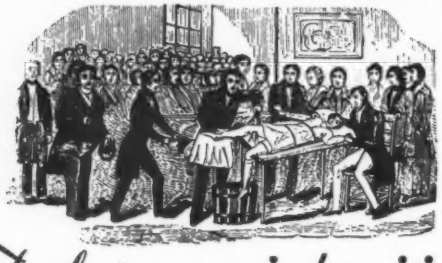

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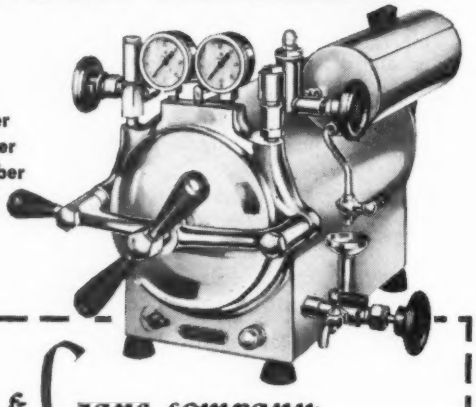

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proved of value in the diagnosis of leptospirosis per se, it is not sufficiently specific to give any clue as to the infecting strain or serotype. To date at our laboratory, this test has been of little value in the diagnosis of canine leptospirosis due to the occurrence of nonspecific reactions between antigens and the majority of canine serums.

The use of various types of macroscopic agglutination antigens in the serologic diagnosis of leptospirosis has been cited on numerous occasions. Although tests employing such antigens have had advantages in the ease and rapidity of performance, they are generally less sensitive than microscopic tests, and often the antigens have been found to be unstable. Recently a capillary-tube test for the diagnosis of leptospirosis was described by Stoenner.[27]

THERAPY

An effective course of treating human leptospirosis still remains a conspicuously unsolved problem. Hall and associates,[28] in a study of 67 laboratory confirmed cases, concluded that none of the antibiotics employed in their study altered the course of disease or affected the duration of leptospiremia. Other workers[29] obtained similar results in dogs, hamsters, and guinea pigs when evaluating chloramphenicol, subtilin, and penicillin G. Gsell,[30] however, reports favorable response in human leptospirosis to either aureomycin or terramycin if initiated on the first or second day of disease. Brunner and Meyer have reported that streptomycin[31] or aureomycin[32] given in adequate dosage will eliminate the carrier state in dogs and hamsters. These investigators suggest the administration of either of these antibiotics to dogs whenever there is a question of an animal being a carrier and transmitting the disease to other animals or man.

CONTROL

The ultimate control of human canicola fever is based on the control of the animal leptospiroses. To achieve this end and to break the chain of infection that perpetuates the disease, it is essential that a vaccine for the prevention of canine leptospirosis be developed and made available for wide-spread distribution and use. Such a vaccine, of necessity, should meet the following requirements:

1. Elicit the production in the recipient of protective antibodies which will persist over a reasonable period of time, while at the same time insure that the vaccinated animals will not develop either clinical symptoms or leptospiruria subsequent to challenge. Bacteriological studies on both vaccinated animals and controls must be carried out to determine the degree of protection attained.

2. Exhibit minimal toxicity following administration.

3. Be polyvalent and give adequate protection against both *Lept. icterohemorrhagiae* and *Lept. canicola* in the United States. In certain other countries, additional leptospiral strains would have to be incorporated in such a vaccine.

Until canine leptospirosis is controlled, a large reservoir of infection remains among the dog population. The owners of these animals must be educated to this fact and to the danger of acquiring canicola fever from close association with dogs.

CONCLUSIONS

Canine leptospirosis is widespread, and its control is a growing problem to the veterinary profession. Certain fundamental questions regarding epidemiological, clinical, pathological, and immunological characteristics of canine leptospirosis remain unanswered. Practicing veterinarians can do much to alleviate this situation by recording and reporting clinical cases of canine leptospirosis, particularly in those instances in which laboratory support has been made available.

Research activities must be directed toward the development of improved diagnostic techniques, further evaluation of therapeutic agents in the treatment of clinical leptospirosis, and development of adequate vaccines for the protection of man and animals.

The extent of human leptospirosis acquired from dogs remains undetermined. Education of the public to the danger of acquiring the disease, the development of adequate diagnostic laboratory facilities, and a constant awareness of the protean nature of the disease are the best means of bringing the problem into proper perspective.

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Books Received

Books received for review during the period from December 5 to January 5, 1955, are listed below. Reviews will be published as space permits.

THE SURGICAL TECHNIC OF ABDOMINAL OPERATIONS. By Julius L. Spivack, M.D., LL.D., F.A.C.S., Associate Professor of Surgery, University of Illinois College of Medicine; Diplomate American Board of Surgery; Corresponding Member Mexican Academy of Surgery; Honorary Member, Medical Chapter, Mexican Red Cross; Senior Attending Surgeon, Columbus Memorial and Mother Cabrini Hospitals, Chicago. Ed. 5. Cloth. Pp. 931, with illustrations. Price $17.50. Charles C Thomas, Publisher, 301-327 East Lawrence Ave., Springfield, Ill., 1955.

ARTHROPLASTY. By St. J. D. Buxton, M.B., B.S., F.R.C.S., Consulting Orthopaedic Surgeon to King's College Hospital; Emeritus Lecturer in Orthopaedics to King's College Hospital Medical School; Past President of the British Orthopaedic Association; Formerly Hunterian Professor, Royal College of Surgeons; Consulting Orthopaedic Surgeon to the Army and Orthopaedic Surgeon to Queen Mary's Hospital, Roehampton, and the Royal Masonic Hospital, London. Cloth. Pp. 126, with illustrations. Price $6.00. J. B. Lippincott Company, East Washington Square, Philadelphia 5, 1955.

PHYSIOLOGY AND PATHOLOGY OF INFANT NUTRITION. By L. F. Meyer, M.D., Professor of Pediatrics, Director of the Children's Department of Municipal Hospital "Hadassah," Tel Aviv, Israel; and Erich Nassau, M.D., Chief, Children's Department, Central Hospital of the Workers Sick Fund, Afulah, Israel. Translated by Kurt Glaser, M.D., M.S., F.A.A.P., and Susanne Glaser, B.A. Ed. 2. Cloth. Pp. 533, with illustrations. Price $11.50. Charles C Thomas, Publisher, 301-327 East Lawrence Ave., Springfield, Ill., 1955.

CLINICAL ORTHOPAEDICS. By Anthony F. DePalma, Editor-in-Chief, with the Assistance of the Associate Editors, the Board of Advisory Editors, and the Board of Corresponding Editors. Number Six. Cloth. Pp. 219, with illustrations. Price $7.50. J. B. Lippincott Company, East Washington Square, Philadelphia 5, 1955.

THE DYNAMIC EQUILIBRIUM OF BODY PROTEINS. Hemoglobin, Plasma Proteins, Organ and Tissue Proteins. By George H. Whipple, M.D., Professor of Pathology Emeritus, Dean of the School of Medicine and Dentistry Emeritus, The University of Rochester, Rochester, New York. Cloth. Pp. 68, with illustrations. Price $3.25. Charles C Thomas, Publisher, 301-327 East Lawrence Ave., Springfield, Ill., 1956.

THE AMERICAN DRUG INDEX. By Charles O. Wilson, Ph.D., Professor of Pharmaceutical Chemistry, College of Pharmacy, University of Texas, and Tony Everett Jones, M.S., Instructor of Pharmaceutical Chemistry, College of Pharmacy, University of Colorado; Director of Pharmaceutical Research, Carbisulphoil Company. Cloth. Pp. 576. Price $5.00. J. B. Lippincott Company, East Washington Square, Philadelphia 5, 1956.

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GROWTH AT ADOLESCENCE. By J. M. Tanner, M.D. (Penna.), Ph.D., D.P.M. (London); Senior Lecturer in Physiology, St. Thomas's Hospital Medical School, University of London. Cloth. Pp. 212, with illustrations. Price $6.50. Charles C Thomas, Publisher, 301-327 East Lawrence Ave., Springfield, Ill., 1955.

CUNNINGHAM AND REED'S GUIDE TO EARNING A LIVING. A Complete Survey of Careers in Business, the Professions, Trade, Agriculture, and Government Service, by Ed Cunningham and Leonard Reed. Cloth. Pp. 116. Price $3.95. Simon and Schuster, Publishers, 630 Fifth Ave., Rockefeller Center, New York 20, 1955.

ATLAS OF BRONCHIAL LESIONS IN PULMONARY TUBERCULOSIS. A Clinical and Morbid-Anatomical Study. By C. Dijkstra, M.D., Medical Superintendent of the Sanatorium 'De Klokkenberg', Breda, The Netherlands. Cloth. Pp. 128, with illustrations. Price $11.00. Charles C Thomas, Publisher, 301-327 East Lawrence Ave., Springfield, Ill., 1955.

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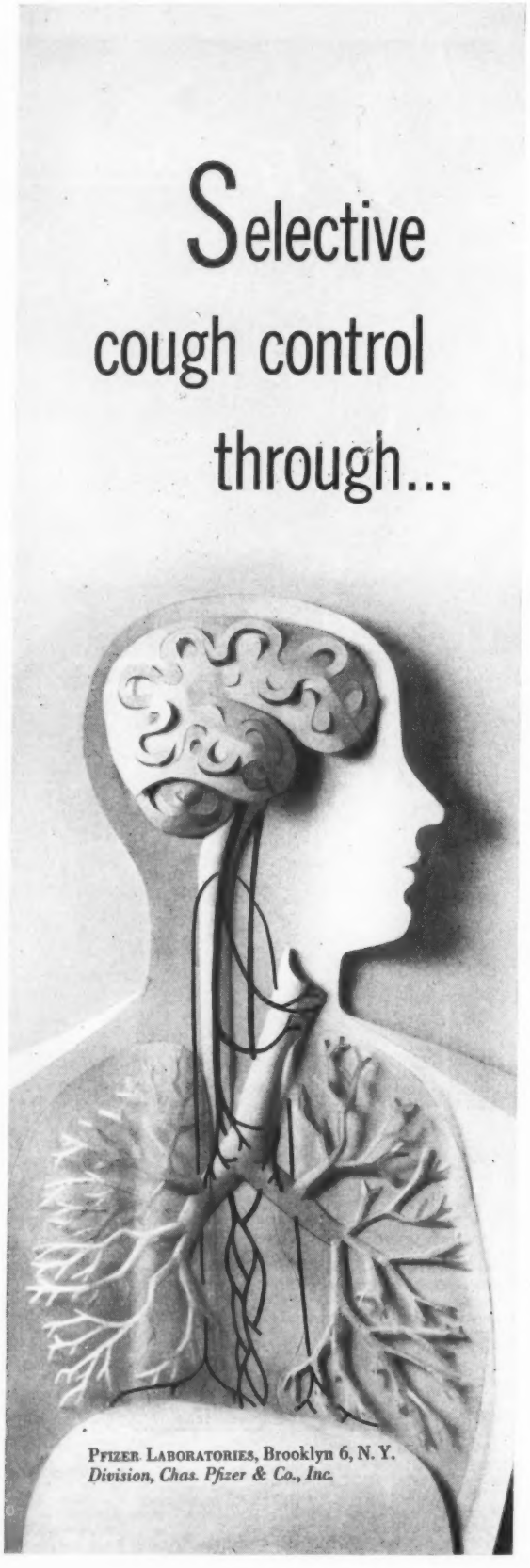

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Albarian, John J., from Los Angeles, Calif., to 2724 E. Coast Highway, Corona Del Mar, Calif.

Asnis, Theodore, from Philadelphia, Pa., to 710 Fordham Road, Bala Cynwyd, Pa.

August, Charles W., COPS '54; 482 E. Duarte Road, Monrovia, Calif.

Battleson, Bruce K., from Irvington, Calif., to 1715 S. Garfield Ave., Alhambra, Calif.

Becker, Alan Harvey, from Detroit, Mich., to Chicago Osteopathic Hospital, 5250 S. Ellis Ave., Chicago 15, Ill.

Benderoff, Fred, KC '55; 17311 Whitcomb, Detroit 35, Mich.

Berndt, William E., KCOS '55; Carson City Hospital, Carson City, Mich.

Berry, Thomas Earl, COPS '54; 3000 Sussex Lane, Los Angeles 23, Calif.

Billman, Bernard D., CCO '55; 3096 Latham St., Lansing 17, Mich.

Bove, Victor M., from Bethlehem, Pa., to 18156 N. W. Second Ave., North Miami, Fla.

Brilhart, William S., from 127 N. Pine River St., to 114 N. Main St., Ithaca, Mich.

Brown, T. Gordon, from Chicago, Ill., to Allentown Osteopathic Hospital, 1746 Hamilton St., Allentown, Pa.

Charnov, Arthur R., PCO '55; Detroit Osteopathic Hospital, 12523 Third Ave., Detroit 3, Mich.

Coleman, Willie Cooper, DMS '55; Truro, Iowa

Collinge, Philip K., from 2004 Meridian Ave., to 2002 Meridian Ave., South Pasadena, Calif.

Curreri, John F., from West Collingswood, N. J., to 124 Lexington Ave., Merchantville 8, N. J.

De Luise, Frank Anthony, CCO '53; Hospital of Philadelphia College of Osteopathy, 48th & Spruce St., Philadelphia 39, Pa.

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Doehring, Edwin A., KCOS '55; Lakeside Trailer Park, 27860 Hickler Lane, Mount Clemens, Mich.

Dott, Raymond N., CCO '53; 10545 S. Oglesby Ave., Chicago 17, Ill.

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Harmon, Robert L., Jr., from Los Angeles, Calif., to 1 Rocking Horse Road, Rolling Hills, Calif.
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Haws, Virgil E., from Bay Village, Ohio, to Ridgewood Osteopathic Hospital, 10000 Geddes Road, Ypsilanti, Mich.
Hill, Alvin B., KC '55; Zieger Osteopathic Hospital, 4244 Livernois Ave., Detroit 10, Mich.
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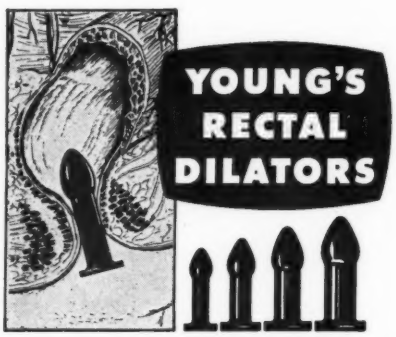

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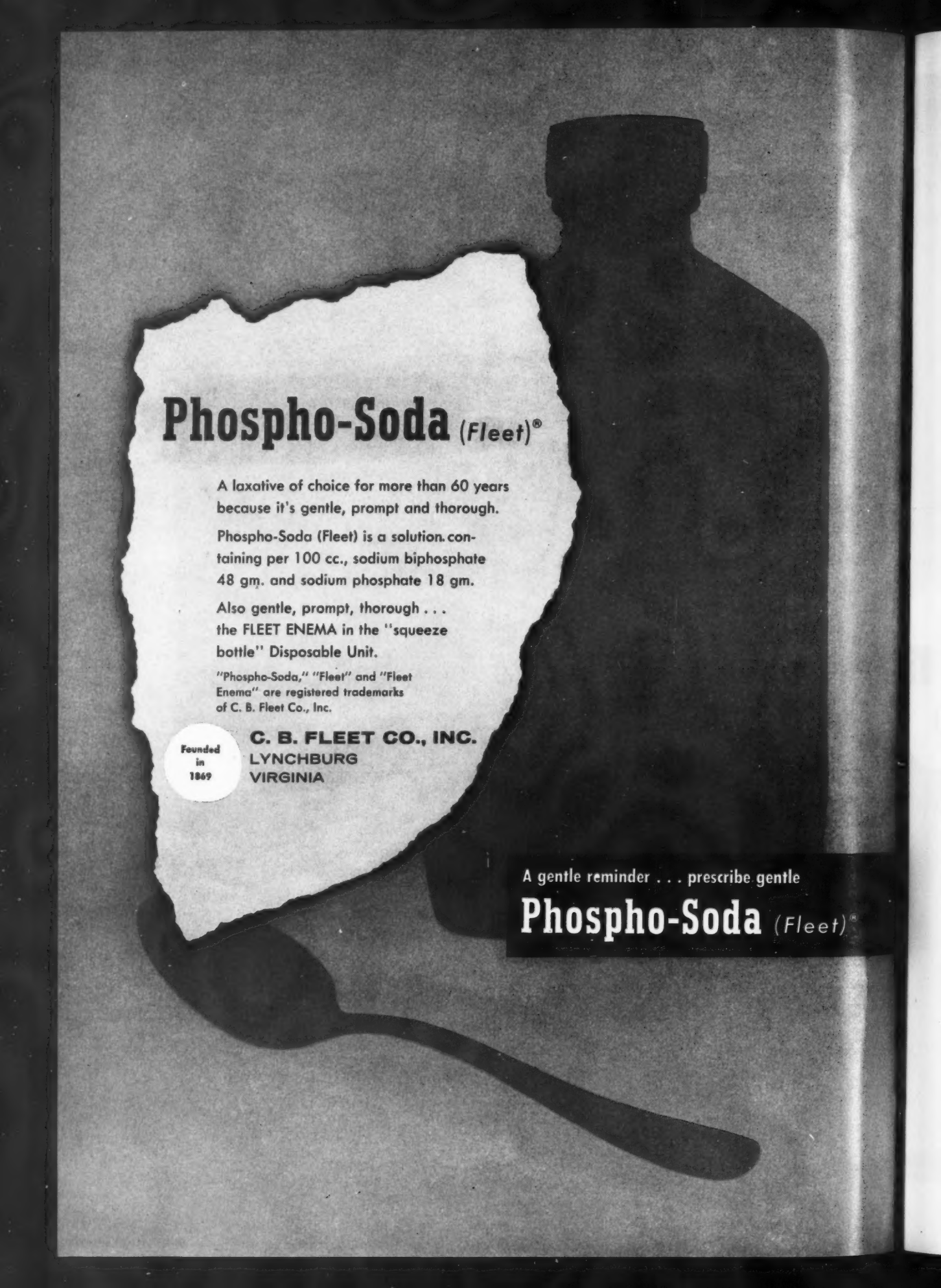
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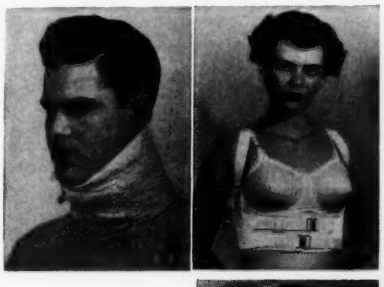

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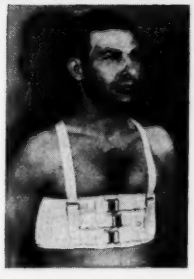

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Husband often the carrier. "Approximately 39 to 47 per cent of resistant cases are reinfections from the sexual partner."[1] Whittington reports infestation in the male in 27 per cent[2] and Freed in 28.5 per cent.[3] A study of all foci of infection, such as urethra, prostate, seminal vesicles, bladder, kidneys, pelvis and preputial sac, would probably reveal even higher incidence in the male.

Danger without signals. Trichomonads in the male rarely produce symptoms to signal their presence.[4]

Prevent re-infection. Karnaky recommends in recurrent cases that the husband wear a condom during coitus for four to nine months. By the end of this time the trichomonads will usually die out.[5] Davis states: "Use of a sheath by the husband has long been advised during the period a woman is under treatment and should be used permanently if he carries the infection."[6]

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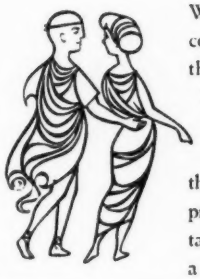

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References: 1. Karnaky, K. J.: Urol & Cutan. Rev. *48*:812 (Nov.) 1938. 2. Whittington, M. J.: J. Obst. & Gynaec. Brit. Emp. *58*:614 (Aug.) 1951. 3. Freed, L. F.: South African M. J. (March 27) 1948, as abstracted in Urol. & Cutan. Rev. *52*:489 (Aug.) 1948. 4. Bernstine, J. B., and Rakoff, A. E.: Vaginal Infections, Infestations, and Discharges, New York. The Blakiston Co., 1953. 5. Karnaky, K. J.: J.A.M.A. *155*:876 (June 26) 1954. 6. Davis, C. H.: West. J. Surg. *63*:53 (Feb.) 1955.

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